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Observations on the Pathology and Cure of Rheumatism.

By WILLIAM BALFOUR, M. D. Edinburgh.

Tantum, quantum quisque potest, nitatur.—CIC.

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SYDENHAM was the first who favoured mankind with a distinct and accurate history of rheumatism. Before his time it seems to have been confounded with gout; since that period it has maintained its ground as an idiopathic disease, and has long been as well understood as any other, the proximate cause of which can be matter of conjecture only.

Concerning the proximate cause of rheumatism various opinions have been entertained. Dr. Macbride and others imagine it to consist in a peculiar acrimony; others in a lentor of the fluids; and Dr. Cullen supposes it to be, in the *acute* species, a phlogistic diathesis of the blood, with a peculiar affection of the muscular fibre; but in the *chronic*, "an atony both of the blood-vessels and of the muscular fibres of the part affected, together with a degree of rigidity and contraction in the latter, such as frequently attends them in a state of atony."

That in *acute* rheumatism a phlogistic diathesis of the system prevails, admits not of doubt, and that there is an affection of either the muscular fibre, or of the cellular membrane, or

of both, is equally certain. An atony, in the *chronic* species, of the muscular fibres, or of the cellular membrane, must also be admitted. But which of these it is, the muscular fibre, or cellular membrane, that, in either species of the disease, is primarily affected, is a matter not quite so manifest. To ascertain this point with any degree of clearness, a review is necessary of the structure and functions of these organs themselves; and I am not without hopes of being able to adduce facts, in the history of cases hereafter to be detailed, which render it highly probable that there is in rheumatism, *chronic* as well as *acute*, an affection of the *aponeurosis* of the muscles, and perhaps of the whole cellular substance connected with them, which forms a principal part of the proximate cause of the disease.

The cellular membrane abounds every where in the human body. It covers the whole, and connects every part. The celebrated Haller, indeed, considers it as constituting the greater part of the whole mass. All the blood-vessels receive a coat from it, from the *aorta*, where it emerges from the heart, to the minutest capillary that enters a tendon.

The nerves are composed of fasciculi, and these again of filaments or fibrillæ. The cellular membrane furnishes a sheath to every nerve, a covering to every fasciculus, and every filament is a tube of the same substance, filled with medullary matter; and on the parieties of this tube are ramified, and are supposed to secrete the medullary substance it contains, those capillaries, of exquisite minuteness, which are continuations of the arteries seen to penetrate the fasciculi. A muscle, whatever be its length, breadth, or thickness, is not a mass of homogeneous substance, but, like the nerves, is formed of many fasciculi. These fasciculi are themselves composed of fibres so delicate and numerous, as to be divisible *ad infinitum*. At all events, their minuteness is such as to have hitherto set at defiance the patient investigations of the most accurate physiologists to discover their ultimate division. But, incalculably minute as are these fibrillæ, they are supplied with vessels and nerves, and inclosed in a cellular sheath, upon which perhaps the vessels and nerves terminate. They are also connected to each other by means of cellular membrane, to form the fasciculi, which in their turn, are enveloped in a common sheath of the same sub-

stance, similar to that which covers the muscle, and separate it from all other parts.

The structure of the cellular tissue is extremely vascular. Mascagni considered its laminæ as consisting entirely of lymphatics; Ruysch, by his injections, reduced the membranes and cellular substances into a net-work purely arterial, the texture of which was so close as to leave no observable space for any other vessels. Hence he concluded, that capillary arteries formed the basis of membranous and cellular tissues. The truth, however, lies between the opinions of these two celebrated physiologists. For, if one set of vessels only are injected, they become distended, compress and conceal the neighbouring parts; and we know, that lymphatic absorption and arterial exhalation take place from all the internal surfaces, by which is proved the existence of both arteries and absorbents in membranes and cellular tissue.

From these data it may justly be inferred, that the functions of the cellular membrane are not merely mechanical; that it does not merely cover, connect, divide, suspend,—but that it serves a purpose in the animal economy, essential to the healthy functions of the parts on which it is so liberally bestowed. It is not consistent with common sense and reason to suppose, that a substance formed as is the cellular tissue of vessels, which carry on, if I may so express myself, the business of life in every part of the body, can remain sound, when the muscular fibre is affected with disease. It is infinitely more rational to conclude, that the affection of the muscular fibre is a consequence of the affection of the cellular substance, whose functions seem, from its universal diffusion, subservient to those of every other organ. For if, as we have seen, the cellular membrane is formed of capillary arteries and absorbents, the balance between their functions being in any degree overset, must produce corresponding phenomena. Thus, if the absorbents of a muscle carry off more than the arteries deposit, permanent contraction, in every direction of that muscle, must be the consequence.

It is well known, that diseased appearances are often confined to the cellular membrane, and that, when this is the case, the organs or vessels which it surrounds exhibit a morbid action.

It is likewise ascertained, from ample observation and experience, and it goes far in countenancing our theory, that, however insensible the tendons and aponeuroses of muscles are in their sound state, injuries and morbid affections of these parts are accompanied with pains unusually severe. Thus, inflammation of the integuments, and of the subjacent cellular substance and *fascia* of the fore-arm, sometimes the consequence of blood-letting, occasions not only the most inexpressible sufferings, but not unfrequently renders the arm contracted and rigid for life.

But the knowledge we possess of the functions of the cellular membrane, goes a great way in explanation of the phenomena of rheumatism. We know that it officiates at once as a *fascia*, a ligament, a mucous gland; and that by it is secreted all the fat and oily substance that is deposited about the joints, upon, between, and in the interstices of the muscles.

In the first place, then, the *fasciæ* of the muscles confine them to their situation parallel with the bones. Were that not the case, a muscle could not contract at all. Destined to act in a certain sphere, if that sphere is lessened, a muscle will either not contract, or its contraction will be of no use. Suppose, for instance, the *biceps flexor cubiti*, the *Sartorius*, any rectilineal muscle, was deprived of its natural bandages that confine it to its situation, what appearance would it exhibit in a state of contraction, were it possible to contract at all in such circumstances? A muscle, in contracting, becomes shorter, thicker, harder, rough, and vibrates like a cord when put upon the stretch. It is evident, therefore, that unless a muscle were bound by its *fasciæ* or *aponeuroses*, its contractions would either be very limited, or, in contracting, it would start from its place like the string of a bow. It follows, that a perfect sound state of the *fasciæ* of muscles is necessary to their vigorous action; and on the supposition of there being in rheumatism a morbid affection of the *aponeuroses* of the muscles, are explained the pain and difficulty of motion, in the first stages of the disease at least, of a limb affected with that disorder.

In the second place, the doctrine of a morbid affection of the *aponeuroses* of, and cellular substance connected with, the muscles, accounts satisfactorily for the debility of the latter,—their

permanent contraction,—their rigidity in *chronic* rheumatism. Were it not for the cellular membrane lubricating the surface of the muscles, it is impossible they could move upon each other; they behoved to contract simultaneously, and to the same degree, otherwise inflammation and adhesion could not fail to be the consequence of their friction upon each other. If, therefore, there should be, from a morbid state of the cellular membrane, a deficiency of that lubricating substance which facilitates the motion of the muscles, rigidity and pain upon motion must in proportion be the consequence. Not only so, if there is a deficiency of the fatty substance, which, in a state of health, is found in a greater or less quantity, deposited between, and in the interstices of the muscles, they must become shorter in proportion,—their fibres must approximate nearer to each other in every direction,—for the muscular fibre is not a line of continuous substance extending from origin to insertion; it is made up of many pieces whose ends are connected with each other, laterally, by means of vessels, nerves and cellular substance. What, therefore, has hitherto been deemed a wasting of the muscular fibre, may, with greater propriety, be considered a deficiency of those cushions which give plumpness to every muscle, and symmetry to the whole. Not but that there is a wasting and contraction, or absorption of the molecules of the muscular fibre itself to a certain degree, and also an affection of the nerves of a part affected with rheumatism. For if we reflect, that the fasciculi and fibrillæ of both the nerves and muscles are inveloped in cellular membrane, we must infer, that the apposition of muscular, and the secretion of nervous substance, are performed by the capillary vessels of that membrane. If, therefore, the functions of these vessels are impaired, the parts they supply must suffer in their turn. But mere disuse will produce emaciation of a limb. There is no fact in physiology better established, than that action is necessary to circulation, and circulation to nutrition. These are, indeed, matters of daily experience. Emaciation of the muscles must therefore be considered more as a consequence than a cause of rheumatism.

In the third place, the effusions that sometimes take place into the sheaths of the tendons, is a proof that the cellular mem-

brane is principally affected in rheumatism. I have seen effusions of this kind occur as the first symptom of the disease; and I have an instance of it in a gentleman who is presently under my care. In this case, a circumscribed tumour, without the least previous pain, appeared in the course of the tendon of the ring finger of the left hand. Unable to explain the cause, the gentleman took little or no notice of it for some days, when it became the centre of pains which shot alternately to his wrist and to the points of his fingers, with frequent and most painful catchings of the tendon on which the tumour was situated. These pains and spasms occurred chiefly in the morning when warm in bed; and in a short time, the patient became unable to grasp any thing with his hand with any degree of firmness. When he applied to me, I desired him to grasp his left hand firmly with his right, pressing the thumb of the latter upon the *aponeurosis palmaris* of the former, and, in that situation, to try what command he had over his fingers. He could instantly use them with the utmost ease and with the greatest vigour. I next directed him to lay firm hold of the wrist of the affected hand with the other, and in this way to try the effect a bandage would produce. This gave him a more complete command still of the whole hand, and enabled him to do with it what he pleased. A clearer proof that the *annular ligament* was deficient in power, cannot be adduced. I endeavoured to persuade this gentleman to wear a bandage about his wrist, till a radical cure was obtained; but, highly amused with the success of the above experiments, and believing that he has the means of relief at command, he satisfies himself with the use of the flesh-brush, and, as occasion requires, with the repetition of these experiments, which never fail of the desired effect. Now, if we reflect that parts of similar structure, though far distant, are often observed to sympathize, we cannot wonder that the tendinous aponeurosis of the muscles, and all its processes, which are of the same nature and structure with the sheaths of the tendons, and indeed but a continuation of the same substance, should be simultaneously affected with them.

In the fourth place, from the fact that the same cause affects different parts of similar structure in different individuals, and in the same individual, perhaps, at different times, we might

judge, *a priori* almost, that it is not the muscular fibre, but the cellular membrane that is peculiarly affected in rheumatism. Thus, exposure to cold produces in one person catarrh, in another pneumonia, in another pleuritis, in another rheumatism, according to idiosyncrasy. Now, the parts affected in catarrh, pneumonia, pleuritis, however they may differ in density, are of the same nature with the tendinous aponeurosis of the joints and muscles, and the cellular substance interposed between their fibres. It is, therefore, not illogical to conclude, that it is the cellular membrane, not the muscular fibre, that is primarily and peculiarly affected in rheumatism. Not but that there must also be an affection of the muscular fibre; for, as has already been observed, the connection betwixt the two, the cellular substance and muscular fibre, is so intimate, that we cannot well conceive the former to be in a morbid state, and the latter remaining altogether sound. But we must repeat, that this affection of the muscular fibre is secondary, and therefore cannot be considered as constituting a proximate cause.

In the fifth place, Dr. Cullen has remarked, that the affection of the muscular fibres attending rheumatism, seems to explain why sprains and spasms produce rheumatic affection. That sprains and spasms frequently terminate in rheumatism, is an acknowledged fact. But this fact is no way explicable on the supposition of a peculiar affection, in that disease, of the muscular fibre. For it is not the muscular fibre that chiefly suffers in these accidents. The muscles are capable of acting with amazing force. They sometimes rupture their natural bandages; lacerate their tendons; and even the bones themselves have been broken by the violence of their action. It is not probable, therefore, that such powerful organs will be the first to yield in such a trial of strength as takes place in sprains, between them, their tendons, and tendinous *aponeurosis*. The fact is, that in cases of sprains, patients uniformly point to the situation of some *aponeurosis*, tendon, annular, capsular, or interosseous ligament, as the seat of debility and of pain. No conclusion, therefore, can be more natural, than that rheumatic affections arising from such accidents, are not affections chiefly of the muscular fibre, but of that substance which is of the same structure with the parts originally affected.

Finally. It would appear from the history of rheumatism, that the proximate cause, of the *acute* species at least, of that disease, is an affection of the aponeurotic expansion of the tendons and membranous covering of the joints. This appears from joints being first affected with pain, and its consequences. In many instances, indeed, the pain is confined entirely to the joints. At other times the muscles come to be affected with pains shooting along their course from one joint to another. But is it by the muscular fibre that these pains are propagated? Is it not more consonant with the other phenomena of the disease, to suppose that these pains are occasioned by the oscillation of the contents of the extreme vessels? It is ascertained, that when red blood is, in consequence of inflammation, forced into vessels that do not naturally admit it, resolution is effected by that blood taking a retrograde course, till it comes to vessels of sufficient calibre to transmit it; in inflammations of the eye, for example, and of the *pleura*. In the latter, no symptoms of inflammation have appeared, upon dissection, in cases which, previous to death, exhibited every symptom of it; a circumstance that can be explained only on the supposition of the reflux of the blood, after death, from the part affected. From this view, it is more than probable, that vessels so extremely minute, and so very irritable and contractile as are the capillaries of the *aponeurosis* and cellular membrane, are so affected, in rheumatism, as to be incapable of transmitting, as in health, the colourless part of the blood; which therefore, by its oscillations and pressure against the parietes of its vessels, occasions those pains, hitherto believed to be propagated from joint to joint, by the muscular fibre.

Independent of the primary affections of the joints, the very nature of the remote causes themselves renders it probable, that the proximate cause of acute rheumatism is an affection of the membranes connected with the muscles. Sudden changes of weather, the application of cold to the body when warm, cannot but affect those parts soonest, and to the greatest degree, that are most exposed to their operation; and the parts so exposed are, next to the extreme vessels of the skin, the aponeuroses of the joints and muscles. The powerful muscles of the larger joints, the most common seat of rheumatic affections, are

necessarily furnished with *fasciæ*, strong and dense, and whose vessels must, of course, be extremely minute. It is, therefore, *a priori*, to be expected, that they must suffer constriction from the application of cold to the body, sooner than vessels of less irritability and contractility, but of larger calibre.

But *chronic* is often the consequence of *acute* rheumatism. Nothing, therefore, can be more evident than that what constitutes the proximate cause of the latter must also form that of the former. For the only difference betwixt the two *species* of the disease consists in this, that the *acute* is accompanied with fever, whereas the *chronic* is free, or nearly free, from it. It necessarily follows, that, if a phlogistic diathesis of the blood, amounting to fever, and an affection of the *aponeurosis* and membranes of the joints and muscles, constitute the proximate cause of *acute* rheumatism, the *chronic* species of the disease must also acknowledge for its proximate cause, an affection, not different in nature though it may be in degree, of the same membranes and aponeuroses.

I was led into these speculations, near as they may approach, or far as they may be from the truth, by what occurred some time ago in my own person, and which I have often since practised upon others, with almost uniformly the same good effect. Having been seized with a rheumatic affection of the left shoulder, chiefly in the course of the *deltoid* muscle, the pain at times, but especially towards morning, when warm in bed, was so severe as to make me cry out. Desirous, on one of these occasions, of moving my arm, a task to which its own powers were unequal, I grasped it firmly with my right hand, about the middle of the pained muscle. To my surprise and high gratification I was instantly relieved from pain; and while I thus held my arm, I could do any thing with it I pleased without farther aid from my right hand than mere compression. This, therefore, was the remedy, the only remedy to which, on all future occasions of the kind, I had recourse, and it never was employed without success.

I now began to think, that surely the muscular fibre was not the seat of pain in rheumatism; not even to those pains occasioned by motion. If it were, how could mere compression enable it to contract with all its pristine vigour? I observed,

moreover, that when, during the paroxysms of pain, I endeavoured to move my arm, the moment the belly of the muscle began to press on the *aponeurosis*, I was obliged to stop; but as soon as artificial resistance was opposed to it, the muscle could perform its functions with the utmost ease. A more decisive proof, I think, cannot be adduced, that the pain and difficulty of motion of a limb, afflicted with *chronic* rheumatism, are not referable to the muscular fibre. It may occur to the reader as it did to me, that the sudden relief from pain which I experienced, is to be explained on the principal of ligatures interrupting the progress of pain, or any other sensation, along the course of the nerves, as in some cases of *epilepsy*, *whitlow*, &c. But this by no means accounts for the fact. For I always remained free from pain for a considerable time after compression was removed. I find, upon inquiry, it is no uncommon thing for people afflicted with rheumatism, to grasp and nibble a pained joint or muscle, for the purpose of obtaining even temporary relief, which they never fail to procure in greater or less degree.

A very pertinent instance of the effects of compression occurred to me, on the 14th of November last. A woman twenty-seven years old, and very much emaciated, complained of a rheumatic affection in her left shoulder, which had rendered her arm next to useless for many weeks. The pain was confined to the *scapular* portion of the *deltoid* muscle. She could by no means raise her arm to a right angle with the trunk of her body. She could not put her hand to her mouth, far less touch with the points of her fingers the crown of her head. Placing her before me on a form, I made gentle pressure with the palm of my hand on the pained part, desiring her, at the same time, to raise her hand to the crown of her head. This she could not do. I increased the pressure, and the motion of the arm became in proportion free. This process was continued till she could move her arm in every direction, with little or no uneasiness. What surprised the patient most was, she in a very short time became capable of using her arm, with nearly as much freedom without, as with the pressure.

How are these facts to be explained? Thus, in my opinion. The *aponeurosis*, and perhaps the whole cellular membrane of

parts affected with rheumatism, is in a state of morbid sensibility; this state of sensibility arising from a preternatural distension of its vessels. Bandages and pressure, by affording support, take off tension, and facilitate motion, which in its turn promotes circulation. The vessels being in this way unloaded, morbid sensibility is diminished; and if the bandages or pressure be often enough applied, or for a sufficient length of time, the vessels and membrane recover their tone. It is evident, therefore, that in proportion as these effects are produced, the motion of a part formerly rigid, will not only become free, but remain so. On this principle it was, that the motion of the patient's arm remained free after the removal of the pressure; on this principle is explained the good effects of friction, &c. in rheumatism. If a person could always move a limb affected with this disease, little more would be necessary to the cure of it. But as that is, in many instances, impossible, and in all, attended with difficulty, in a greater or less degree, bandages or pressure, according to circumstances, by facilitating motion, become, if not of themselves a complete cure, at least most powerful auxiliaries; of which, whoever once makes trial, will, when circumstances require, ever after avail themselves.

I did not see this woman again till the 10th of December, (the distance of near a month from the time she called upon me,—a month too of the most horrible weather that can well be conceived,) when I called at her house to ascertain if the cure was permanent. She told me, she allowed the bandage which I applied, to remain till quite dirty, and that when she removed it to have it washed, she found she could do perfectly well without it, and in my presence performed, with the utmost facility, all the motions of which the arm in its soundest state is capable. In one word, this woman's case is an instance of a severe rheumatic affection, of many weeks' standing, being immediately, completely, and permanently cured, by pressure alone.

On the 21st of October last, I was called to a girl of fourteen years of age, whom I found sitting in a warm room, before a large fire. Her skin was hot, face flushed, and pulse at ninety; all which I was disposed to attribute to the warm regimen she had been so carefully observing. I desired her to remove to a

distance from the fire. She told me she could not move, on account of rheumatic pains, reaching from her ankles to the middle of her thighs. This account I soon found to be correct: for when, in consequence of my pressing her, she made an attempt to rise, she was forced to cry out most bitterly, so that I saw her limbs were totally immoveable. I told her I would make her walk through the room, without pain, before I left her. So much difficulty was experienced, however, in removing her from the place where she sat, that I began to suspect I had put my credit to too great hazard, and therefore endeavoured to pass off, as a joke, the assurance I had given of instant relief. Having accomplished the removal of the patient to a proper situation, I applied a roller of flannel, with a degree of tightness which she could easily bear, to both limbs, beginning at the middle of the thighs, and continuing it downwards over the feet. I now requested she would make an attempt to walk. To this she consented, on condition of being indulged with another person's arm. I allowed her to touch gently her aunt's shoulder. The girl rose up and walked through the room, stifly to be sure, but without complaint. I ordered her to be put to bed, and as she seemed to labour somewhat in her breathing, was desirous of taking a little blood from her arm. This was peremptorily resisted by her aunt, the lady of the house, on the score of the patient's youth. It was in vain I represented, that, though bandaging the limbs was a powerful auxiliary, it never could supersede the diligent use of other remedies generally employed in the cure of rheumatism; above all, that it could have no influence whatever on febrile symptoms. Next day the patient's general health was much the same; the pains as bad as ever. I suspected the cause, and soon found the bandages were hanging loose. I immediately replaced them with the same good effect as before. With the exception of some laxatives, this girl got no other remedy, and the pains were, notwithstanding, put to flight in a few days. A sister of this girl, aged eighteen, soon after my patient got better, was seized in like manner, all over the inferior extremities, with rheumatic pains. Without calling any medical aid, she had recourse to the *bandages*, which had the same happy effects with her as with her sister.

A lady, upwards of forty, who has for many years been a martyr to rheumatism, on hearing "I had found out a cure for it," applied to know what it was. I readily informed her that the application of *bandages* or *pressure*, according to the situation of the parts affected, with a view to give relief from present pain, and to facilitate motion, was the improvement to which I laid claim; assuring her, that whoever made trial of the remedy, would find their account in it. This piece of information appeared to her so very frivolous, that she never returned an answer. I met her on the street some weeks afterwards, when I inquired if she had made trial of the *bandage?* She said she had tied a bit of flannel above the knee joint, but as she had had no return of the pains since I saw her, she could say nothing about it. I plainly saw "my cure" was too simple, cheap, and of easy application, to gain the least credit with this lady. This conversation took place about the beginning of November last, and I was determined this patient should speak to me before I spoke to her again on the subject. She did so. On the 1st of December I was abruptly stopped by her on the street, when she hastily exclaimed, "It will do, for had it not been for your *bandage*, you had not met me today. I was seized yesterday morning with my pains, in a most violent degree, when I was glad to have recourse to the *bandage* as you directed, which gave me instant relief, and I was able to walk abroad with the utmost ease, a thing I could not otherwise possibly have done." This I considered a great triumph over prejudice; and as the patient is a sensible woman, and of unimpeachable veracity, her account may be relied on. This I hold to be an interesting case in every point of view, and quite decisive of the immense utility to be derived from the use of bandages, to those afflicted with rheumatism. That a lady for many years afflicted with rheumatism, to such a degree as to render her permanently somewhat lame of one leg, and all the year over more or less subject to pain, which in the winter season became at times so severe as to confine her, if not to her bed, at least to her room, should, from the first trial of the *bandage*, in one of these paroxysms, be not only relieved from pain, but enabled to walk abroad in cold damp

weather, with a firmer step than she had done for eight years before, is a thing that speaks for itself.

On the 10th of December I again met this lady on the street, when she accosted me in these words: "I am not near so lame now." This was a piece of information that, I confess, I did not expect. I would have been quite satisfied with being told that she had experienced considerable benefit from the bandage, in the way of preventing pain. The ten days, it is material to observe, that had elapsed since she first applied the *bandage*, consisted of weather the most inconstant and severe. I therefore now put it seriously to this lady, if she was convinced that the application of the *bandage* had warded off the pains with which she was threatened on the 1st of December? If she believed the strength her leg had recovered was to be ascribed to the *bandage*? If, from what she had experienced, she believed that *bandages* would be found a powerful remedy for rheumatism? All these questions she answered most decidedly in the affirmative.

On the 15th December, William Graham, aged 32, a private in the Cumberland militia, complained of violent *lumbago*, which rendered him unable to mount guard, and he was unwilling to be sent to the hospital. On examining the part affected, found he wore a broad *bandage* round his body. This he had been accustomed to do, but said he experienced from it no benefit to his back. I asked his pocket-handkerchief, which I formed into a compress, and laid it on the part affected, applying the *bandage* over it as tight as he could bear it. On enquiring how he felt, he replied, "Perfectly at ease. I feel a want supplied, and I can turn myself any way I please with perfect freedom." He went to bed quite well, but in the morning found himself much worse. I saw him again on the 16th, about three o'clock afternoon, when I asked him if he had laid aside the *compress* that his pains had returned? He said he still wore the *compress*, and experienced from it so much benefit, that without it he could not walk at all. On the 15th I omitted to examine his pulse, which I now found at 100. I therefore immediately took twenty ounces of blood from his arm. This took off the phlogistic diathesis of the sys-

tem, and the compress, which, as the pain had extended, I ordered to be enlarged, completed the cure.

In the first week of January, Mrs. M. a lady about 36 years of age, complained of severe pain in the left lumbar region, for which she had been advised to have blood let. On applying to me, I recommended a trial of a *compress* and *bandage*. Having never heard of such a mode of cure, she appeared at a loss whether to take my advice as a joke or not. On assuring her I was serious, she promised compliance as soon as she got home. I insisted on the trial being made immediately; and as I had been setting a fractured arm just before she came in, there was a piece of flannel lying in the room, of which I made a *compress*, directing her to lay it on the part affected, and to make use of her handkerchief for a *bandage*. When I returned to the room I purposely introduced another subject of conversation, that what observations she might make on the mode of cure we had adopted should come spontaneously from herself. Accordingly, I soon observed her moving the trunk of her body, without having received any directions from me to that effect, backwards, forwards, and sideways. I asked her what she meant by so doing. She said the pain was gone, which yet she could scarcely believe, and that to ascertain the fact, she was practising those motions which she dared not attempt before the *compress* and *bandage* were applied, but which she could now do with ease. Next day the pain struck her in the right lumbar region, from which also it immediately removed, on application to the part of the *compress* and *bandage*.

When I relate such instances of the immediate and great good effects of *compression* in *lumbago*, candour and truth demand the acknowledgment, that I have met with several cases in which that mode of treatment completely failed of success. The superficial observer, alone, however, will from hence conclude against the utility of the practice; for the muscles of the loins are not all situated on a plane. Some of them are superficial, others deep seated. Compression may affect the former; it cannot the latter. To deny, therefore, the utility of bandages in the cure of rheumatism, because cases occur which admit not of compression, would be as unscientific as to say, that, because blood-vessels are sometimes ruptured or wounded,

which, from their situation, it is not in the power of man to coerce, Ambrose Paré, in introducing the tying of arteries in amputation, is not the author of the most important improvement ever made in the operative branch of the healing art; or, because we meet with ulcers so vitiated as to admit of being cured by no mode of treatment, that the use of bandages, as introduced by Mr. Baynton for the cure of old ulcers, is not the most valuable improvement that medical surgery has received in modern times. *Cinchona* does not always cure intermittent fever, nor mercury syphilis. But would any man be so mad as to reject these remedies as not generally to be depended on, for the cure of these diseases?

On the 16th January, ——————, residing at Cramond, came to consult me about a rheumatic affection, of many years' standing, in his left haunch. His knees and thighs had also been affected, and are still feeble, but free from rigidity and pain. Walks with a timorous irresolute step, the one foot often involuntarily kicking the other. I applied a bandage to both knees, beginning a little below, and carrying it a little above the joints. This gave him a command of his limbs, he said, to which he had been a stranger for many years. His principal complaint, however, was situated immediately under the crest of the left *ilium*. As soon as I ascertained this, I was sure of being able to afford him relief; for the smooth surface of the bone I knew would present an equable resistance to pressure from without. I began, therefore, with desiring the patient to perform the various motions of which the trunk of the body is capable in its sound state. But this was a task to which he was altogether unequal. His body, indeed, had been confined to a prone posture for a great length of time. He could tie the shoe of his right foot with ease, but could not reach farther than the middle of the left leg. I put him, therefore, in this position; desiring him to point, at the same time, to the spot that checked his stooping farther. This done, I pressed my hand against the part affected, and desired him to put his hand down to his foot. This he did at once, and with facility, to his own astonishment, and to that of his son-in-law, who looked on. Having several times practised this, and other motions of which he was formerly incapable, I applied a compress and bandage,

formed of such materials as were at hand, and sent him away rejoicing.

On the 9th January, I was called to Mr. B. a gentleman traveller, lodged in the Black-bull inn, who informed me he had been arrested on his journey, for four weeks before, by acute rheumatism, and that he had been attended by ———. His father, who had come from Whitehaven to see and carry home his son, having heard, in the town, of the successful application of bandages in the cure of rheumatism, mentioned, on his return to the inn, the circumstance to the patient, who took no rest till his father brought me to him. I stated the impropriety of my interfering with the patients of another practitioner in his absence. But the young gentleman told me, "he had not seen his doctors for some time; that he conceived they did not intend to visit him any more, he having been out; and, at any rate, he was not to be deprived, on account of any trifling piece of etiquette, of the benefit of the *bandages*, if benefit was to be obtained from them."

This gentleman I found convalescent, but complaining grievously of pain in his left hand, which was also much swelled; of pain and stiffness of the left elbow; of pain and weakness about the left shoulder; of pain and rigidity of the muscles of the back of the neck; of weakness and pain upon motion, all along the spine; and of pain and stiffness of the left knee, the outside of which he could scarcely suffer to be touched.

I began with desiring the patient to show me how he could walk. He moved and threw his weight upon the left leg, slowly and timorously, as if afraid to trust himself upon it. But no sooner was a bandage applied, than he planted his foot firmly, and walked with great freedom, declaring that, in respect of his knee, he felt quite a different man. I next proceeded to examine the state of his left arm, and found the range of motion it possessed very circumscribed indeed. He could not even put his hand to his mouth. Upon application, however, of a *bandage*, from the points of the fingers to the elbow-joint inclusive, he could do it freely. On account of the patient being very much fatigued, I did nothing at this call to the shoulder, farther than grasping it with one of my hands, in

order to show him what could be done. Upon this, he moved his arm with great facility in every direction.

January 10th.—Passed a good night, having slept from eleven to five without interruption. Pain of the left hand and knee greatly abated; in other respects as before. Removed the *bandages* and ordered the diligent use of the flesh-brush, for a considerable time, to the parts affected, which was extremely grateful to the patient. Applied the *bandages* as before, and also to the left shoulder, making a turn under the right, by which two breadths of the *roller* were made to press upon the back of the neck, a circumstance that also gave much pleasure and satisfaction.

January 11th.—Pain of the left knee, wrist, and elbow almost gone. Muscles of the neck also much relieved. Swelling of the left hand greatly abated. Motion of the left arm entire, and much more vigorous. Omit the *bandages*.

January 12th.—Has slight pain and stiffness to-day, in both ankles. In other respects improving. Swelling of the left hand entirely gone. Applied *bandages* to both ankles.

January 13th.—Was out yesterday; but says the pain and stiffness of his ankles were such, that he could not have walked at all without the *bandages*. Is resolved to have *a set of them* to carry along with him. This, I think, sufficiently indicates the opinion he entertains of their utility. It is, indeed, in such cases as this, that the pre-eminence of *bandages* in the cure of rheumatism is most conspicuous. Let us suppose that *bandages* had not been applied to this gentleman's ankles,—he must of course have remained at home; let us suppose that I had confided to rubefacients and flannel, for the removal of his pains, when would the desired effect have been produced? in a day? a week? a month? No man can answer these questions. One thing only is certain,—that the longer a patient in such circumstances is confined to the house, the longer is his general health of being restored. But no sooner were the *bandages* applied to this gentleman's ankles, than he was enabled to walk abroad. The consequence was, he returned with an appetite greatly improved, and with a universal glow and moisture of the skin, which are most successfully promoted

by action in the open air, and of more real benefit to a *rheumatic* patient, than all the sudorifics in the world.

On the 15th of December last, I was called to a young man, Simon Stewart, at the west end of the town, whom I found in a condition that almost beggars description. Pale, ghastly, emaciated, he had been a martyr, for three years uninterruptedly, to rheumatism in its most cruel forms. His fore-arms, half bent, felt like two boards, and were so immoveably fixed in the prone position, that he could not see the palms of his hands till they were elevated above his eyes. Had no motion at the wrists; the right *carpus*, especially, was pained, swelled, distorted, and the command he had over his fingers was so small, that for a considerable time he was under the necessity of being fed by others. In the left knee, there was great effusion and pain; it had very little flexion and extension, being almost fixed in the half-bent posture. Both his ankles were pained, swelled, and distorted. He had not been able to stand even, on the soles of his feet, for the last twenty-three months. Sometimes, indeed, within that period, he had walked a little, but he did so by turning his heels outwards, and resting his weight on the outer edges of his feet. In this way he would crawl from his bed, along a range of chairs, to the fireside. Such was this man's situation when I first saw him. At the beginning of his illness he had declined going to the hospital, where he was offered the warm-bath free of expense; but had, notwithstanding, been attended by a host of medical men in succession; one of these, in particular, had done every thing for him that skill could devise, or philanthropy suggest, but, long before I was called in, had also given him over as incurable. Having satisfied myself as to the state of the patient, I applied a roller of flannel to the arms, from the wrists to the elbow-joints inclusive; in like manner to the knee; and, lastly, to both ankles. This done, I desired the patient to come out of his bed and dance. He descended very slowly and timorously, but getting his feet to the ground, and finding he could stand, he at last stepped out, declaring, that if his knee had not been bound so tightly he could have leaped the height of his stick.

December 21st.—Has had great pain in the knee, especially in the night time, ever since the *bandage* was applied, which

has therefore been laid aside. Some rotatory motion of the fore-arms. Apply a compress of flannel to the *aponeurosis plantaris* of the left foot.

December 25th.—Rotatory motion of the fore-arms increasing; motion of the left wrist very considerable; had none at the beginning. Some pain among the *tarsal* bones of the left foot, but can stand on both soles. The *compress* to the left foot a great improvement to his walking; to which, he thinks, there is no obstacle but the knee.

December 28th.—Fore-arms more plump in their appearance, and the skin of a more kindly feel. Walked from his bed to the fire-side, without a stick, or any other support. This is the first time he has done so under my care. Feet quite the natural shape, and sets them down without fear or dread. No impediment to his walking abroad but the knee. Can turn his hands half-way to the supine posture.

℞ Muriat. ammoniæ, ℥i.
Acid. acetos. commun. ℥xii. Solve.

To be rubbed with great diligence all over the knee-joint, twice a-day.

December 31st.—Circumference of the knee diminished three-eighths of an inch. Attempted to walk without the bandages about his feet and ankles; could not set down his feet with confidence and firmness. Applied the bandages, when he walked with the utmost ease, knee excepted.

January 5, 1815.—Had pain among the tarsal bones of the right foot night before last;—gone to-day. Thermometer yesterday and to-day at 40; weather hazy and damp. What is the reason that people subject to rheumatism are so much affected upon the change of weather? I firmly believe it is owing to sympathy between the parts affected and the lungs. This is no extravagant idea. According to our theory, the white parts are the chief seat of rheumatic affections. Now, a great proportion of the lungs consists of cellular substance. Besides, we every day observe sympathies much less explicable than this: between the parotid gland, for instance, and the testes; the kidneys and the stomach; and, what is more directly in point, betwixt the urethra and eye, in gonorrhœa. I am aware of a question that may be started here, namely, can a part distant from the lungs

sympathize with them, or be affected through their medium, without their being themselves sensibly affected? I would answer this question in the affirmative. I think it very rational to suppose, that a part already habituated to a particular disease, a disease too that gains ground by repetition, may become severely affected by sympathy with another part that has been but slightly or imperceptibly affected. In no other way can we explain the fact, that persons subject to rheumatism can, in the morning, before they get out of bed, or even in the night-time, prognosticate with certainty a change of weather. In such cases, the effects produced in the system, by the change that takes place in the atmosphere, must be through the lungs only, for no other part of the body is exposed to its action.

Knee has not been at all troublesome for some nights past. Took off his stockings last night with his own hands, a thing he has not been able to do for twelve months past. Is gaining flesh. The fore-arms, it is remarked by strangers, are more plump than formerly.

January 6th.—Had severe pain last night in both ankles, but especially in the right, and also in a slight degree in the elbow-joints; motion of these parts, however, no way impaired to-day. On inquiry, I found he sat an hour yesterday after my visit, with his clothes hung round him, for want of aid to put them on. Has some catarrhal symptoms, with slight cough Here I may remark, that I have uniformly observed the return of pain, in this patient, to be accompanied with more or less of catarrhal symptoms,—an observation corroborative of what is advanced in yesterday's report, and indeed of our theory, and the whole reasoning on it, from beginning to end.

℞ Vin. ipecacuan. ℥i.
Tinct. opii, gtt. xl.
Aq. font. ℥vi. M.

the half to be taken an hour before, the other half at bed-time.

January 9th.—Has got cold anew. Coughed a good deal last night; severe pain in the ankles, wrists, elbows, and left-knee. Cannot walk to-day, nor suffer the bandages so tight as usual. Keen frost yesterday; thermometer at 40 to-day; weather boisterous and damp.

12th.—Is able to walk again, but has still some pain among

the tarsal bones of the right foot. I do not expect this patient to make any farther progress during the winter months, and shall be very glad if he retains what he has acquired. The bandages, it must be admitted, have done wonders; but they are not a match for an inveterate disease, weather variable in the extreme, an open house, with the patient's bed at the back of the door, a clay floor, and imprudent conduct, combined. I therefore close this case for the present, trusting I shall be able to give a more decisively favourable account of it hereafter.

From the preceding details it will perhaps be inferred, that it is in *chronic* rheumatism chiefly, that decisive effects are to be expected from *bandages*. This may lessen, in the estimation of some, the value of the remedy. But if it is attended to, that *chronic* is as often a cause as a consequence of *acute* rheumatism, that *chronic* rheumatism occurs out of all proportion more frequently than *acute*, *bandages*, as a remedy applicable with the fairest prospect of success in so many instances, cannot, if viewed impartially, be considered in any other light, than as the accomplishment of what has hitherto been a *desideratum* in the cure of rheumatism. To render this evident, we have only to reflect how often every mode of cure of that formidable disease proves abortive. It certainly must be ascribed, as well to the imperfection of the healing art, as to the obstinate nature of the disorder itself, that so many, in every rank, are subjected, during a great part of their lives, to the visitations of this horrible malady. *Bandages* bid fair to supply this deficiency. They are not like medicines exhibited internally, concerning whose operations and effects we are liable to form the most erroneous conclusions. Their effects are immediate and visible. We are not left at a loss to determine, whether the good produced is to be ascribed to the efforts of nature, or to the remedy employed; nor is it a matter of doubt, whether the remedy is of real advantage or not. There can be no uncertainty as to the powers of a remedy, which, the moment it is applied, enables a person to walk, who immediately, and for many weeks before, could not set the sole of his foot to the ground.

But were it even admitted that *bandages* are applicable, with effect, principally in *chronic*, it is evident that they may

operate, in many instances, as preventives, at least, of *acute* rheumatism. This is a fair inference from the girl's case above detailed. In her were present, though the symptoms did not run high, all the characteristics of *acute* rheumatism. But, by the timeous application of *bandages*, not only were the pains immediately relieved, but the fever soon after subsided. A most useful practical hint this—showing that, as the derangement of the system was occasioned by local affection, so the melioration of local symptoms had its influence on those of the system. Here naturally arises the question, may not *bandages* supersede the necessity of repeated detractions of blood in *acute* rheumatism, even when local affections are not the primary symptoms? At any rate, *acute* rheumatism is soon subdued by the lancet; and, if *chronic* rheumatism supervenes, the application of *bandages* in this stage, will, we have reason to believe, prevent that lingering illness, general debility, rigidity and coldness of the limbs, pain and stiffness of the joints, so often the *sequelæ* of *acute* rheumatism.

Every practitioner, surely, of even very limited experience, must have met with cases of *acute* rheumatism, in which the difficulty was, not to subdue fever, but to set the patient on his legs; and, having set him on his legs, to make him walk. In this stage of such cases, more benefit, I hesitate not to pronounce, will be derived from *bandages*, than from all other topical applications that have ever been prescribed by the regular physician, or advertised by the empiric.

But a mechanical remedy that possesses, in any degree, the power of moderating or preventing *acute*, must operate in tenfold effect in cutting short *chronic* rheumatism. Every body knows that, whoever have once become acquainted with rheumatism, may lay their account with a repetition of its visits; and the oftener it comes, and the longer it stays, it strikes its roots the deeper:—this to such a degree, as, in many instances, to render the patients miserable during its stay, and uncomfortable all the rest of their lives. The early application of bandages, by promoting, in the way formerly stated, circulation in the capillaries of the white parts, prevents their permanent obstruction, and consequently the disease from taking such hold of the system as to render it difficult afterwards to

be eradicated. That *bandages*, when early applied, must produce such effects, is proved by what they have done in Stewart's case; for, if they possess such powers in old inveterate instances of the disease, they must, *a fortiori*, be productive of like benefit in recent cases.

Summary of observations made on the effects of *bandages* in rheumatism.

At certain times, in some cases, but especially at the beginning, it is necessary to make the bandages tighter than they can be well borne for any length of time. In such cases, frequent removal of the bandages, and friction in the intervals, are indispensable.

The pains and rigidity of parts do not return immediately on the removal of the bandages; the effects remain for a considerable time after the cause is removed.

Parts that have for a considerable time been treated with bandages come at last to be covered, when the bandages are at any time removed, with a copious, warm, and fluid sweat, which gives a kindliness and pliancy to the skin, which it did not possess before.

Parts that have for a considerable time been treated with bandages acquire plumpness and strength, while parts of the same person, that do not admit of being bandaged, remain emaciated and tremulous as before. This observation is demonstrated in Stewart's case.

Observations on the Fœtal Liver, &c. &c. By James Bryce, F. R. S. E. Fellow of the Royal College of Surgeons, Edinburgh.

[From the Edinburgh Medical and Surgical Journal, for January, 1815.]

It is a circumstance known to all anatomists and physiologists, that the size of the liver, compared with the other viscera, or with the body, is much greater before birth, than after that period; and, although the immediate cause of this be readily explained, by comparing the anatomical structure of this organ during the fœtal state, with its structure in the adult, yet, for what purpose it is intended by nature that this peculi-

arity should constantly take place in the fœtus, seeing less bile is secreted by the liver before than after birth, is a question which, as yet, has not been explained to the satisfaction of physiologists.

In the following pages I shall attempt to explain some important advantages which the constitution of the new-born infant obtains from the diminution which takes place in the size of the liver immediately after birth; and which, I presume, will appear to be of such consequence to the animal economy at that critical period, as to entitle me to deduce from them the final cause, or the purpose intended by nature to be effected, by the greater size of that organ during the fœtal state. For this purpose, we shall first attend to the general situation and connections of the liver, and from a comparative view of its anatomical structure in the fœtus with that in the adult, point out those circumstances on which its great size before birth seems immediately to depend.

The liver is the largest of all the abdominal viscera, and also the largest gland in the body. It is of a very irregular figure, being convex and smooth above, concave and uneven below. It is situated in the upper part of the abdomen, having its smooth and convex surface contiguous to the arch of the diaphragm, and its concave surface in contact with the stomach and part of the intestinal canal. In the adult, its size is such as, in a healthy state, to be easily contained in the right hypochondrium and epigastric regions; but, in the fœtus, it not only fills these completely, but also the left hypochondrium and greatest part of the umbilical region. It is divided into lobes, which, from their situation in the abdominal cavity, have acquired the names of right and left, by a deep furrow on the inferior surface, and by a corresponding membranous ligament above. In the fœtus, these lobes are nearly of an equal size; but, in the adult, the right is much greater than the left. Besides this division of the liver into two great lobes, there is, situated upon the right lobe towards its back part, and near the deep furrow already mentioned, a triangular eminence, called, by anatomists, the lobe of Spigelius; and near it another smaller eminence, which is anonymous; but to which and the other now mentioned the name of portæ has been applied, because

between these pass the blood-vessels of this organ before entering its substance.

The liver is connected to the surrounding parts by means of ligaments, which are formed chiefly by doublings of the peritonæum. The most conspicuous of these is that already mentioned as corresponding with the deep furrow. It is called by some, from its shape, falciform; by others, from the office it seems to perform, suspensory. By this ligament, which, in the fœtus, contains the umbilical vein in its duplicature at the lower edge, the liver is connected with the umbilicus, the anterior side of the abdomen, and with the diaphragm. By doublings of the peritonæum are formed the two lateral ligaments, connecting the lateral portions of the liver with the corresponding parts of the diaphragm. And another connection of this viscus, which has improperly obtained the name of ligament, is merely an adhesion of its substance to the tendinous part of the diaphragm.

The liver, even in the adult, is supplied with blood in a very ample manner in proportion to its bulk.

The great trunk of the aorta, having passed through the diaphragm, sends off a large vessel, called cæliac artery, which soon divides into three branches; one of which is distributed on the stomach, and another, passing to the left, goes to the spleen, while the third and largest goes to the right, and, giving off some branches to the adjacent parts, carries blood to the liver, and is then called the hepatic artery. This artery, passing between the portæ, enters the liver, and is, by innumerable ramifications, distributed throughout its whole substance, terminating in the beginnings of corresponding veins. The blood which this artery carries to the liver, as possessing all those qualities fitted for the nourishment of the animal body, is supposed to be destined solely for that purpose with respect to this organ.

Besides the blood thus carried to the liver by the hepatic artery, it also receives, in a manner peculiar to itself, a large quantity of blood by the vena portæ,—a vein apparently performing in the liver the office peculiar to an artery in other parts of the body. This vessel begins by innumerable small branches, and receives the blood from the whole of the other abdominal chylopoietic viscera. These branches unite, in their

passage towards the liver, into one great trunk, which, together with the artery already mentioned, is inclosed in a membranous capsule; and, running between the portæ, enters the liver, and, like the artery, is distributed throughout its whole substance. Of the ramifications of the vena portæ, some terminate in corresponding hepatic veins, whereby the blood is conducted into the vena cava inferior, and some in another system of vessels, called biliary ducts, through which the bile is carried from its secerning puncta into the gall-bladder and intestinal canal. The blood carried to the liver by the vena portæ is, from circumstances in the mode by which it is conducted thither, and circulated through it, and from its nature and general appearance, deemed that alone from which the bile is secreted by the peculiar action of this organ.

Besides these vessels, which are common to the fœtus and the adult, the liver receives before birth a very copious supply of blood by the umbilical vein. This vessel, conveying the blood from the placenta, passes into the body of the fœtus at the umbilicus, enters the substance of the liver at the top of the great tranverse cleft or furrow which divides it into two lobes, and immediately detaches very considerable branches; by which it not only supplies the left lobe almost entirely, but affords also a very considerable supply to the right. Hence we find the umbilical canal, which is justly esteemed the termination of the umbilical vein, scarcely equal to one-fifth part of the size of that vessel before it enters the substance of the liver. Seeing, then, that the whole blood passing from the placenta to the fœtus passes through the umbilical vein, and that at least four-fifths of it must circulate through the ramifications of that vessel in the substance of the liver before it enters the inferior cava, we readily account for the greater size of that organ before birth, (viz. from the vast mass circulating through it,) than soon after that period. Hence, also, we see how the size of the fœtal liver, as depending on the increased quantity of blood which it receives by the umbilical vein during the fœtal state, must very quickly be diminished after birth, when the supply by that vessel is interrupted. And hence, also, we observe why the diminution, which takes place in the size of the liver after birth, is chiefly in the left lobe.

As another immediate cause of the greater size of the liver, during the fœtal state, may also be mentioned the presence of much mild and viscid bile in the biliary ducts, the ramifications of which extend throughout its whole substance. This is evident by anatomical inspection; and there is no doubt that, from this cause, the magnitude of the liver must be very considerably increased, compared to what it will be afterwards, when, from the action of the muscles of respiration, &c. this viscid matter comes to be completely evacuated into the intestinal canal. I would here observe, that there are many circumstances which render it probable that this mild and viscid bile, which is collected in the biliary ducts of the fœtal liver, by being propelled from thence into the intestinal canal immediately after birth, constitutes the meconium of new-born infants. It seems difficult to understand how the meconium, if secreted from the glands of the intestines during the fœtal state, or if propelled from the stomach during that period, should lodge in the bowels several months without inconvenience, and should, all at once, immediately after birth, acquire such a degree of acrimony as to induce those violent symptoms we daily observe to take place in newly-born children from the retention of this matter. The voiding of the meconium is evidently intimately connected with respiration; for an infant born in the seventh month will void this viscid matter in a few hours after that important function is established; and there is no instance in which infants born at the end of the ninth month have ever suffered this evacuation previous to their birth. As the evacuation of the meconium, then, is as common to the infant born at the beginning of the seventh month as to that born in the end of the ninth month, it is evident that this matter is equally prepared for evacuation in the seventh as in the ninth month, although, perhaps not in the same quantity; but how can we suppose this matter to be lodged in the intestinal canal with impunity, during two months before birth, seeing the retention of it for a single day after birth, whether that happens in the seventh or in the ninth month, is constantly attended with much inconvenience?

The explanation of the origin, and of the excretion from the newly-born infant, of that viscid and tenacious matter which

is called meconium, seems to be this: By the peculiar action of the liver during the fœtal state, much mild and viscid bile is secreted and accumulated in the biliary ducts throughout its whole substance. By the action of the diaphragm, and other muscles of respiration, immediately after birth the liver is considerably compressed, whereby the viscid bile, accumulated in the biliary ducts, is propelled from thence into the intestinal canal; where, acting as a powerful stimulus to the tender coats of the intestines, it excites them into action, and is consequently carried downward, and evacuated from the body; or if, from accidental circumstances, it be retained in the intestinal canal, it then induces those troublesome symptoms which are known to arise from acrid matters applied to the tender coats of the intestines. Does the pure arterial blood derived from the placenta, and which circulates through the fœtal liver, by imparting oxygen to the blood in the vena portæ, render the blood in it less fit for the secretion of bile? and also, does it render what is secreted from it less acrid? If so, ought not advantage to be taken of a knowledge of this circumstance to relieve, or effectually to remove, those violent symptoms which are induced by a superabundance of bile, or by a particular acrid state of it, by throwing in this principle of oxygen largely into the alimentary canal, whereby the blood, passing from thence to the liver in the vena portæ, may become highly impregnated with it? Is it on this principle that acids are esteemed correctors of acrid bile?

The final cause, or the purpose intended by nature to be effected by the great size of the liver in the fœtus, compared with what it is soon after birth, is a question which still remains unexplained to the satisfaction of physiologists. "Hucusque," says a late author, when treating of this subject, "nulla sufficiens assignatur ratio, ob quam vena umbilicalis ad hepar potius quam ad cavam immediate feratur, cur canalus venosus sit umbilicali angustior. Si vero insignem hepatis molem in fœtu spectemus, peculiari usui hoc viscus inservire, suspicio oritur, licet nondum sit nobis manifestus."* And in a similar manner do other physiologists express themselves on

* Vide Scassi de Fœtu, p. 93.

this subject, marking this peculiarity in the fœtus as a circumstance in the operations of nature highly deserving of attention.*

How far the following explanation of certain advantages which result to the newly-born infant from the diminution which takes place in the size of the liver immediately after birth, may appear satisfactory to account for its greater size during the fœtal state, I must leave to the able physiologist to determine. To me it appears that such a state of that organ, and effected precisely by the means we have mentioned, is so necessary in order to complete that grand revolution which takes place in the circulating system at birth, that any deviation from it, would, in my opinion, at that critical period, be attended with certain and immediate death.

In order to illustrate this, I would observe,

1st, That during the fœtal state the lungs are completely collapsed, are of a firm and compact texture, having very little if any† blood circulating through them in the pulmonary artery, and that there is no empty space in what is called the cavity of the breast.

2*d*, That in the fœtus the muscles of respiration are in a relaxed state, or in that state to which they will naturally return after every contraction, or at the end of every natural expiration.

This is strictly true with regard to the intercostal muscles; and with regard to the diaphragm, I would observe, that that muscle is not only not in a state of contraction, but that it is pressed upwards considerably beyond the state of natural relaxation; which occasioned the Baron de Haller to observe,

* Vide Monro's Lectures, MS.

† It appears to me extremely probable, that no blood circulates in the pulmonary artery and veins during the fœtal state, but that the whole of the blood passes directly from the right to the left side of the heart through the oval opening; that the right side of the heart and the arterial canal are not called into action until the period of birth, and that then the use of the arterial canal is only to convey a certain quantity of the blood from the pulmonary artery into the aorta, which could not be transmitted through that vessel until, by the full dilatation of the lungs, a free passage for the blood was obtained during all periods of respiration, after which this canal becomes shrivelled, and is gradually obliterated.

that "the cavity of the breast is short in the fœtus, and greatly depressed by the enormous size of the liver."

3*d*, That after the function of respiration is established in the newly born infant, a certain quantity of air remains in the lungs after every natural expiration.

This is proved by the simple experiment of immersing the lungs of an infant that has breathed, in water; although, before the infant breathed, the lungs were so compact as quickly to sink in that fluid, yet, after having breathed, the air can never again be so completely expelled from them by the ordinary efforts of respiration, as to render them again heavier than water, and they, therefore, now swim in that fluid. From experiments it is known, that a considerable quantity of air remains in the lungs of an adult after the most complete natural expiration, and that a quantity proportionally great is constantly in the lungs of the newly born infant, after the function of respiration and the great revolution in the circulating system have been fully established, there seems little room to doubt.

4*th*, This quantity of air remaining in the lungs after every complete natural expiration, and occasioning what I would term *the permanent dilatation of the lungs*, is absolutely necessary to admit of the free circulation of the blood through the pulmonary artery, during that period of respiration which takes place between expiration and inspiration.

This must appear evident, when we recollect that very little if any blood passes through the pulmonary artery in the fœtus, and also when we attend to that train of symptoms which clearly mark a disturbed, or entirely interrupted circulation in the pulmonary vessels, which takes place from diminishing this permanent dilatation, either by compressing the lungs themselves, as in hydrothorax, and in wounds of the breast, when air is admitted between the lungs and the pleura lining the ribs, or by diminishing the natural capacity of the chest, as happens by fits of coughing, or laughing, or from an increased size of the liver itself, as in many cases of hepatitis.

On an attentive consideration of these circumstances, the following question will naturally suggest itself: Whence proceeds, in the newly born infant, such a space in the chest, as to allow of that degree of permanent dilatation of the lungs,

which is necessary for the free circulation of the blood throughout the pulmonary vessels during all periods of respiration, more particularly during that period which takes place between expiration and inspiration? This question can only, I apprehend, be properly explained by carefully attending to the changes which take place in the liver immediately after birth.

From the situation and connections of the liver, formerly explained, we readily understand how any change in its magnitude will occassion a change in the capacity of the chest; and we know that a chief cause of the great size of this organ, in the fœtus, is the great quantity of blood which it receives by the umbilical vein; and it is evident, that when this supply is cut off, as happens at birth, the size of the liver must necessarily be much and quickly diminished. But this diminution in the size of the liver will necessarily remove that degree of pressure from the diaphragm, which occasioned it, in the fœtus, to protrude into, and greatly diminish the capacity of the chest. From this circumstance, the lungs will admit of a greater degree of expansion, from the air which is taken in by inspiration, and a certain degree of permanent dilatation of them, in proportion to the dimunition of the liver, will be established, independent of the muscles of respiration. Thus, by the action of the muscles of respiration, by whatever means this may be excited, a quantity of air is taken into the lungs immediately after birth, which, if the circulation in the umbilical cord remains entire, will be completely expelled again at the end of every expiration; but as the force of the circulation in the cord, and consequently the size of the liver, quickly diminishes, the function of respiration becomes more strong; the capacity of the thorax, and the permanent dilatation of the lungs, increase; and as, in a short time, the circulation in the cord becomes entirely interrupted, the size of the liver, as depending on this circumstance, must be greatly diminished, the capacity of the chest increased, and the permanent dilatation of the lungs so far established, as to allow the blood to flow more or less freely through the pulmonary vessels at all periods of respiration; and, in proportion as the inspirations become more deep, and the muscles of the thorax and abdomen act more strongly, the size of the liver will be still farther diminished, by being more

fully emptied of the remaining blood which it had received by the umbilical vein, and also of that viscid bile which was collected in the biliary ducts in the fœtal state: thus still farther increasing the capacity of the chest, and establishing such a degree of permanent dilatation of the lungs, as freely to allow the passage of the whole mass of blood through the pulmonary vessels, even after the deepest natural expiration; at which time the arterial canal will become flaccid, and begin to be obliterated, and the revolution in the circulation of the blood may be reckoned complete.

The great advantages which the animal constitution obtains from this diminution which takes place in the size of the liver after birth, and consequent establishment of a considerable permanent dilatation of the lungs, are evident throughout life. By this means, the important function of respiration is rendered far less liable to be impeded, or entirely interrupted, by those accidents to which we are daily exposed. Thus, the smallest degree of diminution of the cavity of the thorax, or pressure on the lungs, as from coughing, laughing, from hydrothorax, empyema, &c. must, but from the circumstance mentioned, have been attended with very great inconvenience, or even immediate death; whereas, by the permanent dilatation of the lungs being established, we find, from experience, that a very considerable degree of diminution of the cavity of the chest may take place, or that the above diseases may be present to a considerable extent with little inconvenience.

The Baron de Haller, when treating of the peculiarities of the fœtus, more particularly of the great size of the liver, and of the diminution which it undergoes after birth, says—"Diminutio hepatis est ex naturæ finibus, locum enim pulmoni parat in quem se distendat, et obstaculum minuit quod diaphragmatis per inspirationem descensui se opponebat."

Here it is evident that there is a very great difference between the advantage supposed by the Baron de Haller to arise from the diminution of the fœtal liver after birth, and that which I have now explained; because, although we agree that the cavity of the chest is thereby increased, yet the opinion of that celebrated author was, that, by this diminution in the size of the liver, the lungs were merely allowed to be dilated more

freely at each inspiration than they could otherwise have been: but he certainly does not state, that, from this circumstance, such a degree of permanent dilatation of them is established as to allow the blood to flow freely through the pulmonary vessels during all the periods of respiration. Nay, it appears very clearly, that of this permanent dilatation of the lungs, and of the free circulation of the blood through them in the pulmonary vessels, during all the periods of respiration, he was entirely ignorant, as may be collected from the following passage, contained in his celebrated work: "In inspiratione summa facilitas nascitur sanguini de corde dextro exeunti. In expiratione vero pulmo undique urgetur et in multo minorem molem comprimitur: vasa ergo sanguinea breviora quidem fiunt cum retractis bronchiis eademque angustiora nunc sunt, siquidem pectus secundum tres suas dimensiones arctatur. Sanguis ergo quidem in pulmones undique comprimitur; et venosus æqua vi pressus, partim versus arteriosum quidem reprimitur eumque moratur aliquantum, partim versus cor sinistrum promovetur. Quare in expiratione quam ponimus stabilem superesse, pulmonis pro sanguine immeabilitas oritur, quam neque absque palpitatione et vitioso conatu, demum omnino ullis suis viribus cor vincere queat." Lib. viii. sect. 4.

Besides the permanent dilatation of the lungs, there is also another advantage which the animal constitution derives from the diminution which takes place in the size of the liver immediately after birth, which is perhaps not less important. Since, during the fœtal state, very little if any blood circulates in the pulmonary artery and veins, and as, after birth, a very considerable quantity is constantly present there, it must be evident, that, unless some supply was added to the circulating mass, at the critical period when the revolution in the circulation takes place, such a quantity of blood must necessarily pass from the aortic into the pulmonic circle as to induce, in the former, such a loss of tension and tone as would be attended with the very worst consequences. In order, therefore, to prevent this, it is wisely ordained by nature that the liver should, in the fœtal state, receive, in the manner we have formerly pointed out, a much greater quantity of blood than is necessary for it to retain after birth. From this circumstance, when,

at birth, the circulation in the cord comes to be interrupted, the great quantity of blood which is at that time contained in the vessels of the liver is propelled into the vena cava, whereby such a supply of that fluid is given to the general circulating mass, as is necessary to prevent those bad consequences which would otherwise have arisen from the passage of so considerable a portion of blood from the aortic into the pulmonic circle: so that, in proportion as the liver is, by the action of the muscles of respiration, &c. gradually diminished in size, will not only the permanent dilatation of the lungs be increased, but also will the quantity of blood which is, after birth, constantly found in the pulmonary vessels of the lungs, be supplied by that which is propelled from the liver; and by this transmission, as it were, of a certain quantity of blood from the liver into the newly-dilated lungs, will that due balance be supported throughout the whole circulating system, which is so necessary for health, and that loss of tone and dangerous debility prevented which would, at such a critical period, have been attended with faintings, or the immediate death of the tender infant.

From these observations, I conclude,

1*st*, That the immediate cause of the great size of the liver, in the fœtal state, is chiefly owing to a greater quantity of blood circulating through it before birth than after birth.

2*d*, That the diminution which takes place in the size of the liver, after birth, is effected by the change which takes place in the circulation of the blood at that period.

3*d*, That from this diminution in the size of the liver, after birth, arises *that degree of permanent dilatation of the lungs* which is necessary to admit of a free circulation of the blood through the pulmonary vessels, during that period of respiration which takes place between expiration and inspiration.

4*th*, That, *by the transmission of a quantity of blood from the liver into the newly-dilated lungs, at the period of birth*, that loss of tone and debility is prevented which would often be attended with fatal consequences.

5*th*, That these circumstances are of such important advantage to the animal constitution as to ensure the constant for-

mation of the greater size of the liver before birth than after that period, and are consequently to be considered as the purposes intended by nature to be effected by that peculiarity in the fœtus.

Remarks on the Fever which occurred at Gibraltar in 1813. In a Letter from Joseph D. A. Gilpin, M. D. Inspector of Army Hospitals at Gibraltar, to Colin Chisholm, M. D. F. R. S. &c. &c.

[From the Edinburgh Medical and Surgical Journal, for July, 1814.]

My Dear Sir,

I have received your letter of the 11th November, and am happy, and not a little flattered that mine to you, on the subject of the contagious fever of 1793, has met your approbation. During the months of September, October, and November last, a disease in every respect similar to *that*, was prevalent in this garrison; and had we not thinned our population, by turning eight thousand persons out of it, it no doubt would have proved as destructive as it was here in 1804. I am the only medical man that escaped the contagion; and what was more extraordinary not a member of my family, six in number, caught it; and I know not another family of which that can be said. We all of us took four or five doses of bark every day, by way of keeping up the tone of the stomach. I do not pretend to say that we owed our safety to that, but I did the same at Martinico, and escaped infection there also. When the disease ceased, the lieutenant-governor called upon all the medical men to give in a statement of their opinions, as to the nature, cause, and treatment of it. I enclose you the slight sketch which I gave, together with a statement of the deaths, &c. and an authentic document sent me by a well-informed Spanish physician, who volunteered his services in the civil lazaretto, established without the walls of the garrison, and which clearly, in my opinion, proves that the fever was *imported*. In the statements of fifteen medical men, two only seemed to be undecided as to its being contagious; the rest were staunch

contagionists. In the street where it first appeared, the houses on *each side* were speedily affected. I had, with others, many numerous families under my care, the members of which were almost progressively attacked. I attended the governor, his lady, and three children, with servants, in all amounting to upwards of twenty; the servants indeed were sent, at least most of them, to the military lazaretto. I have had some correspondence with Sir James Fellows, the inspector at Cadiz. From his account, the disease there was highly contagious, and he mentions a curious circumstance,—that a body of people who were situated in a marshy situation entirely escaped the infection. I cannot at this moment lay my hand on his letter, or I would give you his own words. The disease at Malta is the true plague, with buboes, carbuncles, &c. By the last accounts from the governor, it is now confined to one village, which they have walled round, and have placed a cordon of troops. I should be glad to have Dr. Haygarth's work; I have no doubt of its being a valuable one. *Your* book, my dear sir, we have in the library, and it has been pretty well turned over lately, I assure you. I give you an extract of a letter to Earl Bathurst, I am certain it will give you pleasure, although it is so flattering to my feelings. The packet is about sailing, and I have returns, &c. to transmit to the Board. This must be my apology for this very hasty scrawl. Should you have any other commands, lay them freely upon me, being most sincerely and faithfully yours,

Gibraltar, *March* 1814. Jos. D. A. Gilpin.

By publishing the extract from Governor Campbell's letter to Earl Bathurst, mentioned in the foregoing, I may perhaps commit a breach of confidence; but it is so honourable to the character of my friend, and does so much justice to his merit in the faithful discharge of his most arduous duty on this very trying occasion, that I cannot resist the desire to make the reader acquainted with it.

"*Extract of a Letter from his Excellency Lieutenant-General Campbell, to the right honourable Earl Bathurst, dated Gibraltar, 25th December*, 1813.

"In having the honour to make this communication, I feel it incumbent on me to notice particularly to your lordship, the great professional abilities, zeal, and attention, manifested by Dr. Gilpin, deputy-inspector of hospitals, as the head of the medical department. The able manner in which he has conducted the arduous duties of his situation, during one of the most trying periods that could have occurred, claims my warmest approbation; and for which I trust, together with his claims for long service in the West Indies, your lordship will have the goodness to submit the doctor's pretensions to promotion, to the favourable consideration of his royal highness the Prince Regent."

OFFICIAL STATEMENT.

"During the months of August and September last, I saw some cases of fever, which appeared to me to be the usual autumnal bilious remittent; but on visiting two men in City Mill-lane, I found them labouring under a fever, apparently of a still more serious type; but as I saw them only a few hours previous to their death, I had not sufficient grounds on which I could found a decided opinion as to the nature of the disease.

"I was soon after called by the late Mr. Pigoli, to see some of his patients; and in their cases I recognised the symptoms and appearances of a fever which has been denominated typhus icterodes, and of which I had seen numberless cases in the islands of Grenada, Martinique, and Guadaloupe, when physician to the forces to the late Lord Grey.

"In the month of October, I attended different families, the numerous members of which were attacked in succession, and with a fever of the same type. Many of the symptoms were similar to those which accompany bilious remittents, such as anxiety, listlessness, alternate chilly and hot fits, white tongue, yellow skin, nausea, vomiting, &c.; but those symptoms and appearances which I considered as characteristic of the dis-

ease above named, were the protruded red eye, and exquisite pain at the bottom of its orbit, and of the forehead, back, and limbs; and, as the disease advanced, the dilated pupil, excessive irritability of stomach, hæmorrhage from the mouth and nostrils, dark vomiting, skin of a dingy yellow hue, unlike the bright yellow suffusion of the bilious remittent, and in many cases a fatal total suppression of urine. To this catalogue I may add, that insidious cessation of symptoms, which almost always occurs about 60 hours from the first attack, raising hopes in the patient and his attendants, that are speedily quelled by an aggravated recurrence of every fatal symptom. This deceitful calm I have often witnessed in the general hospital at St. Pierre's, in Martinique.

"In the general mode of treatment, the medical officers of the garrison are, I believe, agreed. Calomel given at first, in rather a full dose, and afterwards in smaller ones, at the distance of three or four hours, seems to be the measure pursued; and it has been observed, that if the bowels be thoroughly opened, before the third or fourth day, the disease frequently proceeds with few untoward symptoms, and generally does so if the remedy affects the mouth. In the West Indies we hailed that effect as a very favourable one. In many cases, however, whatever might have been the previous treatment, a succession of alarming symptoms occur, and few more so than the extreme irritability of the stomach. Various remedies have been recommended, with a view to calm its violent action; the application of a blister; a table-spoonful, given at short intervals, of an equal mixture of lime-water and milk; solid opium in doses of half a grain or more, every two or three hours; pills made of Cayenne pepper, brandy, &c.; but it has been observed, that a repetition of purgative injections, and the patient's refraining for some hours (should his strength admit of it), from swallowing medicine or food, has had a good effect.

"The authorities for bleeding, in incipient cases of this fever, with a view to prevent congestion and subsequent topical inflammation, are no doubt very respectable; and, in some cases, when the patient was vigorous and plethoric, the practice has been successful. But we are now, I presume, possessed of a remedy in the cold affusion of water, which more

speedily produces a solution of fever, and checks the inordinate action of the heart and arteries, from the continuance of which arises the congestion and topical inflammation, so much to be dreaded. It is a mode, too, of removing fever, which possesses one great advantage over that of the lancet; for though it should not produce the complete effect intended, it certainly does not diminish the patient's strength, but leaves him in a state that may enable him to bear the operation of any other energetic remedy that may be thought necessary: on the other hand, should the loss of blood fail in its effects, we may easily conceive how ill the subject of it would be prepared to struggle against a disease so frequently rapid and fatal in its termination. I cannot say, however, that I saw many cases here, in which I would have recommended the cold affusion; neither the state of the pulse, nor the heat of the body were such, as, in my opinion, to warrant the application of it. I preferred, therefore, frequent *tepid* spongings with vinegar and water. Children, indeed, were much benefited by the cold affusion.

"That the disease in question is contagious, (or more properly speaking, *infectious*, as actual contact does not appear to be necessary to its transmission), I entertain not the least doubt, though an opposite opinion has been held by some highly respectable characters. I have witnessed, both abroad and in this garrison, too many melancholy instances of the disease being communicable from one person to another. At Martinique, in the year 1793, we suffered dreadfully from the ravages of a fever, in every respect similar to that which lately appeared here; and, in numberless instances, its infectious nature was ascertained, by its attacking those who were in attendance on the sick; and it is a melancholy truth, that very few of the medical officers survived the pestilential duty in which they were employed. But as, in this statement, I am only called upon to give my *own* opinion, I do not think it necessary to combat further the opinions of others. I shall merely add, that innumerable circumstances have brought a degree of conviction to my mind, that is not to be shaken by any arguments or reasonings on the side of non-contagion, that I have hitherto heard of or read.

"In endeavouring to account for the production of the dis-

ease in this garrison, many difficulties, no doubt, arise, which I do not by any means pretend to solve; but merely to state some of those which, in my opinion, militate against the idea of the disease having originated in Gibraltar.

"I find a difficulty, for instance, in viewing it as an endemic proceeding from marsh miasmata, or other noxious exhalations, as a considerable number of persons entirely escaped the disease, although strictly confined to the only situations where I conceive these effluvia may be supposed to exist, the dock-yard and navy garden. I find, too, a difficulty in attributing it to the peculiar state of the atmosphere, at the period of its appearance; for during the number of years that have elapsed since we have held this rock, surely the state of the atmosphere, and supposed prevalence of marsh miasmata, &c. must frequently have been as they were in the years 1804, 1810, and 1813; and I have not heard that a fever of a similar type to that which prevailed during those years is on record. Local circumstances may have varied, no doubt, and concurred in rendering the type of a reigning fever more malignant, such as a great increase of population, crowded dwellings, &c.; but, for some years past, I am informed, there has not been much variation on these heads. I am inclined, therefore, to believe, that this infectious fever was brought into the garrison by a person who died of it, soon after his arrival, it was said, from a place infected previous to his leaving it; and from affidavits on record, it appears that it was introduced in a similar way in 1804; and had it not been for the prompt and vigorous measures pursued, the year 1813 would have exhibited as melancholy a list of victims.

"Jos. D. A. Gilpin, D. I. H.

"*Gibraltar, December* 1813."

Authentic official document (respecting the importation of infection), by a Spanish physician.

"The following is the mode in which, according to the nicest investigation, the fever was introduced into the garrison of Gibraltar, in this present year, 1813.

"On the 11th of August, a town xebeque, called the Fortune, whereof was master or patron one Lodovico Bosano, *alias*

Molta, arrived from Cadiz. One of the crew thereof being ill, was sent to the Catholic hospital, who died on the 19th of said month, with all the symptoms of the fever now prevalent, namely the yellow-fever.

" A Frenchman, native of Paris, died on the 3d of September same year, in Governor's street, near City-Mill-lane, with the same symptoms as the former man, and who had also come passenger on board the vessel before alluded to; and, from the 3d of September to the 11th of the same, nine persons died in the neighbourhood. On this day I observed, in the same district, two cases of the yellow-fever, which I instantly reported to Doctors Gilpin and Fraser, who consequently adopted the necessary precautions upon such alarming accidents.

" It is also asserted, that a gun-boat which came in from Cadiz, about the beginning of August, had some of her crew put on board the prison ship, San Juan, who soon took the infection:—this fact will be better elucidated by the testimony of Surgeon Williams, of said prison-ship.

JOHN CORTES."

"*General Statement of New Cases and Deaths of the Epidemic Disease prevalent in Gibraltar, from the 8th September to the 4th December* 1813.

Date.	New Cases.				Deaths.					Detail of military deaths.	
	Lazaretto.	Town.	South.	Military Hosps.	Total.	Lazaretto.	Town.	South.	Military Hosps.	Total.	
To Sept. 17	54	17	0	0	71	16	17	0	0	33	Officers, 25
24	110	0	0	211	321	26	20	5	28	79	Royal artillery, 65
Oct. 1	134	45	8	165	352	60	34	0	61	135	R. sap. and miners, 18
8	101	94	11	232	438	50	21	3	49	123	4th R. veterans, 47
15	104	198	27	261	590	48	20	2	69	139	7th R. veterans, 62
22	81	181	15	289	566	46	84	5	76	175	11th detachment, 17
29	34	63	3	158	258	26	34	0	57	117	26th regiment, 54
Nov. 5	9	14	0	95	118	3	3	0	25	31	37th do. 55
13	8	6	2	59	75	6	4	2	16	28	Foreign recruits, 21
20	5	5	3	27	40	2	3	0	9	14	Barrack department, 4
27	0	0	0	9	9	0	0	0	3	3	Soldiers wives, 43
Dec. 4	1	1	0	9	11	0	0	0	4	4	Children, 6
Total	641	624	69	1515	2849	283	204	17	397	901	Total 417

Jos. D. A. Gilpin, D. I. H."

SELECTED REVIEWS.

Observations sur la Nature et le Traitement des Maladies du Foie. Par ANTOINE PORTAL, Professeur de Médecine au Collége Impérial de France, &c. &c. 8vo. pp. 646. Paris, 1813.

[From the London New Medical and Physical Journal, for February, 1815.]

THIS work on the Nature and Treatment of Liver Diseases is the production of M. Portal, a distinguished physician of Paris. His "Anatomie Medicale" and other valuable writings, are well known in this island. They reflect honour on his talents and industry; and entitle him to a conspicuous rank amid the more celebrated pathologists of the present age.

Of a book, containing more than six hundred closely printed pages, and treating upon a subject thus comprehensive and important, it will be difficult to institute, within the limits of common criticism, a clear or useful examination. With the principal divisions of the work, we shall notice any prominent or peculiar feature which it may display; present, in a concise form, and stripped of all superfluous ornament, the more instructive and luminous histories of disease, elucidated by dissection; and endeavour to convey to the British reader, a general and correct knowledge of the present state of French theory and practice in morbid affections of the liver.

Conformably to our design, we proceed to lay before the reader the plan, and enumerate the divisions of this important volume.

The work consists of two divisions. *Those diseases which are generally acknowledged to affect directly the liver*, compose the first.

Under the second division are considered *the conditions of the liver in various maladies, which are believed to have their origin in other organs; and which terminate, for the most part, in phthisis of the hepatic viscus* (phthisie hépatique). Eight chapters constitute the first division.

The first chapter treats *of pains of the liver.*

In illustration of this symptom, many cases are borrowed from the writings of respectable pathologists. Two only are cited from our author's practice. Dissection shows that pains of the liver commonly are produced by biliary concretions, ulcers, suppuration, or enlargement of that organ. It is satisfactorily proved, from several of these histories, that numerous, large, and even angular, concretions, may exist in the gall-bladder, unaccompanied by jaundice, pain, or other symptom, indicating their presence. Of this fact we have long been convinced. Our author's valuable cases we present with all possible brevity and precision.

A middle aged woman had long been subject to obscure pains in the epigastric region. Much food, mixed with bile and mucus, was evacuated from her stomach by the operation of an emetic; the pain became more severe and constant with frequent nausea. Portal was consulted; and discovered on examination, that the left lobe of the liver was affected. There was great soreness on the lightest pressure. Menstruation was obstructed. Medicine did not relieve. Vomitings, sometimes mixed with blood, succeeded. The epigastric pains were augmented. Fever came on. Food of every kind was rejected. Emaciation, diarrhœa, evening exacerbations of fever, and night-sweats, terminated in death.

Emollient drinks, bathing, and venesection had been employed.

The liver was found of a black colour and softened in structure; particularly the left lobe, which was large, and adhered closely to the peritoneum. The right lobe was externally of a violet colour; and the membrane readily separated from it, as in putrefaction. The pyloric orifice of the stomach was contracted; its circumference thickened. The vena portarum with its branches was full of thick black blood.

A lady experienced for many years pain in the hepatic region; and colic from indigestion. Her complexion was often yellow; urine red; stools gray. The lower limbs became œdematous: pain was felt in the situation of the right kidney. The urine grew turbid, and had at times the appearance of blood. The swelling of the extremities increased. Fluid collected in

the abdomen. Respiration became short. The pulse was commonly natural. Death was preceded by constant drowsiness.

The waters of Bichy,* regular bathing, leeches, and an alcoholic preparation of opium, were the remedies employed in this case; which had been by some of the physicians considered as an affection of the right kidney!

Two fortunate cases of liver disease, complicated with colic, jaundice, and pulmonic symptoms, are next detailed. They were treated by vomiting, bleeding from the arm and hæmorrhoidal vessels, blisters, soap-pills, with bitter extracts; infusion of soap-wort and hop; pills of assafœtida and sulphur, infusions of borage and other plants with elder-rob; the terra foliata tartari (acetate of potass) dissolved in the juices of plants of the natural families of succory and borage; syrup of certain aperient roots; warm bathing; flannel dress; the mineral springs of Bichy.

In the fixed or wandering pains of the abdomen, and other parts of the body, consequent on continued or intermitting fevers, injudiciously treated by cinchona, our author recommends gentle vomiting and purging, diaphoretics, the waters of Bichy, the application of leeches to the hæmorrhoidal vessels. By others, as Baillon, general bleeding is preferred, even where symptoms of debility are manifest. We are warned to distinguish such pains from others, dependent upon a febrile state. In the latter, cinchona is indicated.

Our author, in his remarks on *hepatalgia*, contends that the substance of the liver itself is susceptible of pain, and successfully controverts the once received axiom: "ubi dolor, ibi morbi sedes." He shows that affections of the biliary system may be accompanied by pains in the umbilical, splenic, nephritic, or other more remote regions of the body. His explanation of the causes and symptoms of angina pectoris (the *stenocardia* of Brera) is neither satisfactory nor conclusive. He considers the pain of the superior extremities, occurring in that disease, as an affection of the diaphragmatic nerves, produced by the morbid liver; which, in these cases, he asserts, is enlarged, and

* "All the waters of Bichy," according to Dr. Saunders, "are warm, chalybeate and alkaline; probably mixed with some earthy muriats, which increase their operation on the bowels."

variously diseased. From an elevation of the diaphragm, and consequent diminution of the thoracic cavity, produced by this or other affection of the abdominal viscera, the heart, he contends, suffers constriction; and hence the peculiar phenomena of angina pectoris. Similar consequences may result from compression of the pericardium by intumescence of the lungs or mediastinum, or by dilatation of the heart or its large vessels, independently of hepatic malady.

That such morbid alterations of the thoracic or abdominal viscera must incommode the heart, and exert a pernicious influence upon its functions, it would be idle to deny. That these affections, existing at the same time, might signally favour the development, and aggravate the distressing symptoms of angina pectoris, we are ready to allow. But we do positively, and once for all assert, that the embarrassments resulting to the organ of circulation from such abdominal and thoracic enlargements, do not, whatever be their nature, duration, or degree, constitute the angina pectoris of British pathologists; a distinct and particular disease, having for its invariable cause, an ossification of the coronary arteries of the heart. Science is indebted for the discovery of the cause of angina pectoris to *British* labour and research.

A section on *the general treatment of pains of the liver* closes this chapter. Amid a crowd of various and often inert remedies, mercury is slightly mentioned, as useful in *hepatalgia* from a steatomatous and syphilitic taint. The English are reproached with the indiscriminate employment of this powerful mineral in inflammatory or other pains of the liver.

"But we have never," says M. Portal, "seen them, (mercurial frictions) succeed in these cases. M. Vitet, who was a great advocate for such practice in pains of the liver, even when complicated with fever, and in various congestions of that organ, has repeatedly employed them under my observation without effect. On one occasion, frictions with the corrosive muriat (oxymuriat) of mercury were prejudicial."

How are we to explain results so widely differing from those we daily witness in practice, on this side of the channel? Are we to hold them, as resulting from peculiarity of climate or constitution?

The second chapter treats *of enlargement, congestions, and obstructions of the liver; and of diminution, induration, and a softened state of that organ.* It comprehends four different articles. *Cases of enlargement of the liver, with remarks upon it,* constitute the first.

Twenty-three dissections of enlarged liver are here quoted from the works of various pathologists; many of them are highly interesting. In one case, recorded by Bartholine, the morbid organ is said to have weighed forty pounds. A remark made by our author in this place deserves to be commemorated.

"The liver appears to form a tumour in the abdomen in all those who have effusion in the right cavity of the thorax; and even in those, whose right lung has acquired an extraordinary volume; because the diaphragm is then thrust down towards the abdomen. This sometimes takes place in phthisical diseases, and may lead to erroneous conclusions."

Our author, in his remarks upon this article asserts, that great eaters have a larger liver than sedentary, hard-working, or abstemious persons. The latter have often a contracted stomach, and very small liver. In rickety, scorbutic, scrofulous, and syphilitic affections; in those who have suffered from protracted fever, the liver is commonly augmented in bulk, often in weight. The increase of weight does not, however, invariably occur with increase of volume; an enlarged liver being sometimes lighter, or a diminished one heavier, than the organ in its natural state. He also exposes, in a rather humourous and sarcastic strain, the fallacy of an opinion entertained by some physicians, that the Spigellian lobe can be, when enlarged, felt by examination through the parietes of the abdomen. The effects which an enlarged liver may produce by mechanical pressure upon the surrounding organs, are next considered.

"But it is not," says M. Portal, "only by the effects of compression which the liver exercises upon these organs, that their functions are disturbed. It may operate upon them, as upon the parts more remotely situated, by the medium of the nerves, the blood-vessels and lymphatics, or the cellular structure, which compose its substance; and of the membranes with which it is invested. And what influence, moreover, may not the liver exert, by means of its secreted fluid, upon the bowels, the lungs,

the brain and nerves; upon the urinary organs; the skin; and, in fact, upon all the solids and fluids of the body, as well in health as in disease?"

Disordered action of the heart, palpitations, syncope with constriction of the chest, pains and numbness of the superior extremities:

"Indeed," says our author, "all that assemblage of symptoms, erroneously described by the English as a distinct disease, by the name of angina pectoris, may result from the pressure of the diaphragm against the pericardium, by a liver enlarged generally or solely in its left or horizontal lobe."

Upon the error of this reasoning we have before delivered our opinions; it would be superfluous to repeat them.

The stomach may be thrust to the left when the right lobe of the liver is enlarged; downwards, by the pressure of the tumid left lobe. The spleen may, from a like cause, suffer compression, and be made to displace the left kidney. The inferior extremity of the œsophagus may be compressed and lengthened in the abdomen by the voluminous liver; especially at that part where the tube is lodged in an excavation of the latter organ posteriorly.* The cardiac orifice of the stomach may, in like manner, become contracted by the pressure of the hepatic tumour. The right kidney is often much depressed, from an elongation of the inferior extremity of the corresponding lobe of the liver.

The second article includes *general considerations on the symptoms, causes, prognosis, and treatment of the enlarged and obstructed liver, from anatomical and clinical observations.*

"Almost all chronic diseases, fevers, derangements of digestion, colics, as well as flatulence, jaundice, vomiting, diarrhœa, melæna, œdema, and the various species of dropsy, are accompanied by a general congestion of the abdominal viscera, and particularly of the liver."

The symptoms of hepatic obstruction are drawn with a very clear and masterly hand, in this chapter; from which obstruc-

* We are told, on the authority of Bartholine, that obstinate vomiting may arise from compression of the œsophagus, in its passage behind the tumefied liver. Hence, perhaps, sometimes the fatal vomiting which occasionally takes place in liver diseases.

tion, cutaneous diseases, in our author's opinion, frequently originate; and he finds that they yield to remedies capable of re-establishing the wonted course of the biliary secretion.

"The piles are a frequent consequence of disordered liver. They are sometimes so considerable as to occupy not only the margin of the anus, but to extend through the whole of the rectum, and even higher in the colon. We need only consider the circulation of the vena portarum, and the situation of this vein in the liver, to understand how frequently piles must be induced by obstructions in that organ."

"From the same cause, the cutaneous veins of the inferior extremities swell and become sometimes varicose; and this inference is supported by the salutary effect of aperient medicines in removing such dilatations, especially when they procure evacuations of bile."

We cannot, for ourselves, comprehend how the obstructed circulation of the vena portarum should operate in determining a varicose state of the superficial veins of the leg, although we have been long aware of its influence in producing hæmorrhoidal affections. Our author would probably have been more correct, in referring the former of these morbid phenomena to the compression which, under some circumstances, the inferior vena cava may suffer from the tumid liver.

Congestions of the liver may terminate variously; in inflammation and suppuration, chronic and occult, or acute; and manifested by hepatic pains, colic, jaundice, pyrexia with shiverings, colliquative sweats, diarrhœa, extreme emaciation: or gangrene, announced by cessation of pain and febrile excitement, prostration of strength, and syncope. Or they may, in other cases, take on the form of scirrhous induration; which, after existing a long time, falls commonly into painless, unhealthy suppuration; and thus the liver may be disorganized without any symptom clearly indicating this morbid and destructive process.

The gall-bladder, when distended with bile, may be felt by external examination: indeed, by light compression, bile may be made to flow from it into the intestines. When considerably enlarged, the posterior inferior extremity of the right lobe of the liver may be felt, particularly in an emaciated subject, through the numerous muscles by which it is covered.

The liver of the human subject, in an erect posture, descends lower than in the horizontal; protruding more than two fingers' breadth below the false ribs, in the former situation; where, in the latter, it is entirely concealed by them. Hence, our author takes occasion to expose the error of the common practice of laying the patient in a recumbent posture to examine the condition of the liver. He should stand up or be seated. The spine should be inclined anteriorly and towards the left. For obvious reasons, the liver will be most advantageously examined during inspiration.

As the liver may be pushed downwards by effusion in the thoracic cavities, or by enlargement of the viscera which they contain; so, on the contrary, it may be elevated to such a degree from its natural site, by curvature of the spine, abdominal dropsies, tumours of the spleen, mesentery, kidneys, ovaries, or uterus, that even considerable enlargements of that organ can no longer be detected by external examination. The situation of the liver may also be considerably changed by other deviations of the body, from its wonted form. "These notions," says our author, "are necessary to enable us to distinguish accurately, by the touch, if the liver be diseased or not."

In examining a subject in the horizontal position, we should take care that the bed on which he is laid, be not too yielding. The head should be raised, and supported by a firm pillow; the lower limbs bent, and the knees brought together: in fact, the abdominal muscles, and particularly the recti, should be put in the utmost possible state of relaxation; and in examining the condition of the various contained viscera, the hand will be most advantageously applied during the act of expiration.

A section *on the general causes of obstructions of the liver* follows. These causes are manifold, as catarrhal affections, syphilitic, scorbutic, scrofulous, &c. suppressed or excessive excretions, inflammations, compressions, various fevers, mental disturbances; but our author attempts not to explain their mode of operation. Obstructions of the liver, he adds, may be formed by blood, by bile, by lymph, or some one of the constituents of the latter, as albumen, gelatine, mucus. How far these distinctions and refinements are founded on correct observation; how far they may admit of discrimination in the living subject of

disease, and hence be turned to good account in practice, our readers will presently have an opportunity of deciding for themselves.

A fourth section contains some valuable remarks upon the *prognosis* in hepatic obstructions. At the fifth, on the *treatment* of these diseases, we shall not pause. With the exception of a few remedies, the practice recommended is very inert. Mercury, the sheet-anchor of British physicians, is barely mentioned. To this subject we shall, ere long, have occasion to revert.

Article third treats of *obstructions of the liver by various fluids*. Its first section is *upon sanguineous congestion* of that organ.

"There are few parts of the body," observes our author, "so prone to sanguineous congestion as the liver; doubtless, not only because it receives a greater proportionate supply of blood by the hepatic artery and vena portarum, than other viscera; but because its veins are proportionally smaller than in other organs; and particularly so in relation to the capacity of the former vessels."

Obstructions, existing in the pulmonary cavities of the heart; dilatations of those cavities; disorders of the respiratory organs, by opposing an impediment to the free circulation of the pulmonary artery, may occasionally determine congestion of the liver, as may thoracic effusions or morbid affections of the diaphragm. Obstructions of the spleen, by embarrassing the circulation of the splenic division of the common cœliac trunk, and hence determining an unusual quantity of blood to the hepatic division; disease or augmentation of the volume of the stomach by immoderate eating, whence arises impeded circulation of the coronary artery of that organ, and of the gastric branches of the hepatic, may produce a similar effect upon the liver.* Thus gluttons have frequently been found to have enlarged liver, with spleen much diminished by the pressure of the cardiac extremity of the stomach. Upon the same obvious

* Our anatomical readers will recollect that the coronary stomachic artery, the splenic, and hepatic, are the primary divisions of one common trunk (the cœliac.) Upon this foundation was raised, some years since, an ingenious but too mechanical and limited theory of the physiology of the spleen.

principle, tumours or dropsies of the abdomen, or compression of the abdominal parietes by tight clothing, may operate in producing congestions of the liver.

The phenomena peculiar to this morbid condition of the liver are pourtrayed by our author with great fidelity and precision. He considers the evacuation of pure blood by the mouth and rectum, so often occurring in these cases, as, in general, salutary; though sometimes followed by fatal exhaustion. It flows into the stomach or intestines from the cysto-hepatic duct. Abstraction of blood from the arm and hæmorrhoidal vessels, constitutes, with cream of tartar (supertartrite of potass) and certain vegetable preparations, of questionable efficacy, our author's principal remedies in this form of hepatic congestion.

Obstructions of the liver by bile and biliary calculi are considered in the second section of this article. We have here a long account of the physical and chemical properties of the bile, of its uses in the animal economy, and a survey of its influence in the production of diseases. Jaundice, our author asserts, may arise from absorption of bile from the intestinal canal, under certain circumstances of disease. He has even seen in the absorbents of the *mesentery* of patients thus affected, a "yellowish bitter fluid." The biliary ducts may become greatly enlarged, and the gall-bladder itself has been known to form an immense tumour, containing several pints of bile. After our author's remarks on the seat, symptoms, and physical properties of biliary calculi, and a sketch of the analysis of bile, by the latest French chemists, the following distribution of the former, by M. Fourcroy, is presented to us.

"There are six species of biliary calculi; the *hepato-biliary*, the *hepato-adipocerous*, the *cysto-biliary*, the *cysto-cortical*, the *cysto-adipocerous*, the *cystic* of a *mixed* character or *adipo-biliary;* of these species, some are brown, blackish, irregular, tuberculous. Others are more hard, of a brown, yellow, or greenish colour, present concentric layers; the external one frequently dry, smooth and gray. The third variety comprehends white ovoid concretions, of a form more or less irregular, covered by a whitish, commonly unequal, crust, formed, as it were, of sparry layers or crystalline scales. All these calculi

are soluble in the pure alkalis, in solutions of soap, and in the fixed oils."

Upon the causes and treatment of biliary obstructions and calculi, nothing very novel or interesting is advanced. For their removal, repeated emetics, soap, bitters, chalybeate waters, and lime-water, borax (borate of soda) are recommended; and it is allowed, evidently with reluctance, that calomel, "le remède de *Durande*," may be very efficaciously employed in the commencement of the disease; although its salutary effects have been "unduly exaggerated."

Death may result from a rupture of the distended gall-bladder, and consequent effusion of its contents into the abdominal cavity. The tumour also, formed externally by a morbid collection of bile, may be readily mistaken for an abscess, and opened; an error which must often prove fatal. The remarks upon the means of distinguishing biliary from purulent collections, we shall briefly transcribe. They are judicious, and pregnant with practical utility; and although confessedly taken from a memoir of M. Petit, in the second volume of "the Memoirs of the Academy of Surgery," they may yet be unknown to the majority of our readers.

The tumour formed by the amplified gall-bladder is situated in the right hypochondrium, near the external border of the cartilages of the false ribs; has a sensible fluctuation, without pastiness; an uniformly smooth surface, without heat or redness. Jaundice, with colics, white alvine excrement, and universal itching of the body usually come on. There is pain shooting towards the umbilicus, and caused by dragging of the cysto-hepatic duct. In the progress of the disease, this pain becomes more diffused, and affects the centre of the epigastrium. Distension going on, the biliary tumour exhibits the characters of inflammation; and is, under these circumstances, with difficulty distinguishable from abscess. Sometimes this inflammation terminates in resolution, without the accumulated bile, which distends the gall-bladder, being discharged into the duodenum. In such case, the possibility of mistaking the collection for an abscess is obviously increased. An attentive observer, aided by the luminous diagnostics laid down here, might, however, be enabled to distinguish them with tolerable precision.

The bile, from long retention in its reservoir, may acquire acrimonious properties, or become of thicker consistence: in the first case, abscess, with fatal effusion into the peritoneal cavity, may ensue; in the other, biliary concretions may be formed, attended by all their train of violent and distressing symptoms. When, in consequence of inflammation, adhesion has taken place between the distended gall-bladder and the peritoneum, the contents of the former may, in some cases, be successfully evacuated by the knife, as they cannot then be effused into the abdominal cavity. Surgeons have even gone so far as to perform this operation; extract biliary calculi; and, by the introduction of a probe through the wound, attempt to remove the obstruction of the cystic duct; but it is a perilous enterprize, and as such has been absolutely rejected by the celebrated Sabatier.

The most common causes of biliary obstructions are, according to our author, calculi lodged in the gall-bladder, the cystic, hepatic, or common ducts; or, " plastry concretions" compressing the parietes of those ducts; scirrhus of the duodenum; and morbid enlargement of the pancreas. Pancreatic calculi, by obstructing the orifice, common to the biliary and pancreatic ducts, may, we suspect, sometimes, though perhaps rarely, operate in producing the same effect.

The whole of this section, a few apparently obscure passages excepted, is written in a very clear manner, and contains much valuable information. We particularly recommend an attentive perusal of it to the reader.

The third article of the second chapter of M. Portal's work is upon *obstructions of the liver by various fluids*. Its first and second sections, on *sanguineous congestions of the liver*, and on its *obstructions by bile and biliary calculi*, have already passed under review.

Lymphatic obstructions of the liver constitute the subject of the third section. Under this generic title are comprehended three different species of obstruction: *the albuminous*, *the gelatinous*, *the mucous*. We shall attempt to elucidate our author's opinions upon these differences, and to expose the base on which they are founded, by a statement of the morbid appearances peculiar to each species, which examination of the liver after death presented.

Albuminous obstructions.—Morbid appearances: The maxillary glands; those of the absorbent system, situate beneath the platysma myoides and between the trachea and jugular veins; the glands of the lungs and mesentery, enlarged and filled with a plastry substance; the lungs themselves much shrunk and hardened. The liver enormously large; its anterior margin greatly indurated; the substance, when stripped of its membrane, whitish; more so internally than on the surface: layers of a dark gray colour disposed here and there. Many lymphatic vessels, gorged with a thick substance, appearing like hard slender cylinders, both in the interior and on the surface of the organ. The substance distending the liver equally white. Symptoms: Extreme emaciation; disgust for food; maxillary glands and absorbents of the neck enlarged; abdomen indurated; liver evidently projecting in the epigastric and right hypochondriac regions; and hectic fever. The subject, a boy of eight years.

The matter forming these obstructions, our author was led to consider as extravasated albumen. He supports this conclusion by some rather coarse experiments. A slight acquaintance with modern chemistry would surely have suggested tests more delicate and unequivocal. Different portions of the morbid liver were found to harden on exposure to a brisk fire, and on immersion in boiling water or alcohol. These results are confirmed by the examination of a second analogous case.

"The albumen," it is subsequently observed, "which forms these lymphatic obstructions, is hardened by the action of fire or alcohol. The gelatine, on the other hand, liquifies by heat, and remains permanently in solution, when dissolved in boiling water; while mucus, thus treated, rises to the surface, and differs from fat, which in the former respect it resembles, in not being inflammable."

Our author, in his treatment of lymphatic congestions of the liver, prescribes preparations of ammonia; mercurials with antiscorbutics and bitters. Pills, composed of muriat of ammonia and oxymuriat of quicksilver, are a favourite remedy. Mercurial frictions are likewise recommended, and the mineral waters of Barèges, of Cauterêts, and Aix-la-Chapelle, especially after the administration of mercurials.

Gelatinous obstructions.—Morbid appearances: Liver weighing twelve pounds, and of a rounded figure. The fissure, separating its two great lobes, well-nigh obliterated. Several variously-sized eminences on its external surface. Internal structure of uniform consistence, rather relaxed than condensed; colour irregularly gray and red. The parenchyma, in some parts, unchanged; in others, appearing confounded with a foreign substance, which formed tumours on the external surface of the liver, and filled some unnatural cavities in the interior of the viscus. Symptoms: Gradual emaciation without evident cause; light yellowness of the skin; hiccough; severe colic; high-coloured urine; whitish fæces; depraved taste; pains, with remarkable protuberance in the epigastrium; excessive vomiting and marasmus; evening accession of fever; the abdominal tumour becoming, before death, very hard and unequal, and occupying all the right side to the corresponding ileum and navel. The subject, a boy of four years.

The substance occupying this liver became liquid, on exposure to gentle heat; did not take fire or crepitate on burning coals; did not coagulate in alcohol or boiling water, and remained permanentlydissolved in the latter: the undoubted characteristics, in our author's opinion, of gelatine. Other cases and dissections of the same nature are recorded.

Mucous obstructions.—No history is given in elucidation of this species. The substance forming them dissolves in warm water; but rises to the surface on the reduction of the temperature, and becomes a dry pellicle upon exposure to air: it does not inflame on burning coals. This will be found generally, though not always, the predominant principle in very indurated livers.

Liver gorged with serum and containing hydatids.—Of this form of disease five histories are detailed. The shortest and most interesting we transcribe. Morbid appearances: A large cavity in the great lobe of the liver, filled with hydatids; the colon ulcerated, and adherent to the liver around the morbid excavation, and communicating with it by a common aperture. Symptoms: Constant pain in the region of the liver; griping in various parts of the abdomen; bodies, resembling vesicles, voided by stool; disease lingering. Subject, a man, aged 40.

In the third and fourth sections on *obstructions of the liver*

by fat, and on *compound obstructions*, nothing occurs to arrest our attention. The characteristic properties of the obstructing matter in the former, are its rising to the surface after solution in hot water, and its inflammability. We must be careful not to mistake a white and fatty appearance of the liver for its total conversion into adipose substance. The latter are formed by a combination of two or more of those simple species of obstruction which we have been considering.

The sixth section contains remarks on *various morbid conditions of the liver, indurated, diminished, softened.*—Eleven illustrative cases are quoted from divers sources. But these remarks are, like the concluding article of the chapter on *hepatocele or hernia of the liver*, destitute of peculiar attraction.

How, we would ask M. Portal, are the varied forms of hepatic obstruction, which he has with such labour and minuteness been exposing, to be detected in the *living* subject of disease? Is each variety of organic lesion characterized by a peculiar set of external phenomena, which can enable us to decide with correctness upon its precise nature, and influence our therapeutic views? We apprehend not: or surely M. Portal could scarcely have so far forgotten the great end and aim of all pathologic research, as to neglect the opportunity thus afforded of throwing new light upon the dark and perplexing paths of diagnosis. After reiterated examination of the sections, in which the several species of hepatic congestion are described, no pathognomonic symptom, no peculiarity of external feature, calculated to serve as a base of practical distinction, has arisen upon our view; and it moreover appears, that in the several varieties of lymphatic obstruction, even dissection itself, unaided by a ray from the torch of experimental chemistry, is inadequate to illustrate the precise differences of morbid structure. Subtle distinctions too frequently serve rather to clog, than accelerate the march of science: yet, on the other hand, it is unwise to condemn rashly, new facts or discoveries, because we see not, or are incapable of directly appreciating their applicability to the improvement of that branch of science in which they have arisen.

Jaundice constitutes the subject of the third chapter. Twen-

ty-two dissections are brought together in elucidation of its various causes. As this disease, or rather symptom, is referable to morbid affections of the internal organs, so different in seat and character, we deem it better to arrange and generalize the results of these dissections, than to enter minutely upon any individual history.

Morbid affections, giving rise to jaundice, may reside immediately in the liver or its appendages; or in some neighbouring or remote organ. In the latter case, the biliary secretion may be obstructed in its course to the duodenum by the direct and evident mean of mechanical pressure; or is disturbed in a manner inexplicable upon obvious principles, and probably referable to the trackless and mysterious influence of sympathetic irritation.

Of these twenty-two cases, fifteen came under the first class; and in all of these, dissection showed, as the origin of the morbid phenomenon, biliary concretions: an enlarged, indurated, scirrhous, tuberculous, purulent or sphacelated state of the liver:—or one or other of these forms of organic lesion, complicated with concretions. The other seven cases belong to the second class; and here, indurated pancreas, scirrhous duodenum, tumours of the mesentery, enlarged spleen, or dilated colon, were detected. Amid several histories, subsequently quoted, to prove that jaundice is not the invariable consequence of biliary concretions, however large or numerous, we shall transcribe one, conspicuous for its singularity; and subjoin our author's explanation of the phenomenon, as it appears to us alike rational and correct.

"Upon inspecting the abdomen of an irritable old man, no gall-bladder could be discovered. A large biliary calculus occupied its place."

"I cannot believe," observes M. Portal, "that the subject of this case was without a gall-bladder, as Fernal (from whose writings it is quoted) represents. More probably, the concretion being so large as to completely fill the reservoir, the parietes of the latter acquired an intimate adhesion to it; and hence appeared to be wanting. Thus the heart has been said to be destitute of pericardium, when this membranous sac has

become closely and universally adherent to the external surface of the contained organ."

After some observations on the *name* and *symptoms* of jaundice, *its most clearly-ascertained causes* are enumerated in the following order: 1st. Bilious plethora. 2dly. Sanguine plethora. 3dly. Inflammation of the liver and neighbouring organs. 4thly. Diminution or suppression of natural or morbid evacuations. 5thly. Severe or protracted pain. 6thly. Acrid poisons or the bite of venomous animals. 7thly. Violent affections of the mind. 8thly. Fevers. 9thly. Congestions or obstructions of the abdominal viscera, particularly the liver. 10thly. Falls, contusions, severe compressions of the abdomen; and the catalogue of exciting causes is closed, with an obvious and inexplicable want of correctness, by *infantile jaundice.*

Upon each of these subjects our author enters separately. Amid the various causes determining sanguineous congestion of the liver, pregnancy is mentioned, as causing the blood to be retained in the vena portarum. But how the obstructed circulation of a vessel should operate in producing a state of sanguineous congestion in any organ which derives from such vessel its principal supply of blood, we profess ourselves utterly unable to comprehend.

Suppression of accustomed evacuations, or the injudicious repulsion of cutaneous diseases, is frequently succeeded by jaundice. M. Portal knew a lady, who having, by the application of powdered alum, removed a very copious and offensive discharge from the axillæ, was immediately seized with jaundice; from which she did not recover until the salutary excretion had been restored. In referring the jaundice, which frequently arises during an attack of gout or rheumatism, to the pain attendant upon these diseases, an error is surely committed; of which we could scarcely have suspected an intelligent observer like M. Portal. It will, we believe, be found, upon rigid examination, that disturbance of the biliary system forms a common, if not essential, feature in the origin of all gouty and rheumatic affections. We, perhaps, go too far, in hazarding an opinion, that the day may not be far distant, when these insatiate foes of human comfort, their dependence upon certain forms of abdominal derangement clearly and invaria-

bly detected, shall no longer occupy a place in the list of idiopathic diseases.

Biliary concretions have frequently been discovered in the gall-bladder and cystic duct of persons, who, when living, had exhibited no appearance of jaundice. The explanation of this circumstance is without difficulty; while the hepatic and common ducts are free, bile will be regularly excreted into the duodenum: and even, when either of the latter is obstructed, provided the obstructing mass be not so situated as accurately to plug the canal, a sufficient quantity of the biliary fluid may find a passage to the intestine; and thus the decisive manifestation of jaundice be obviated. Hence, an opportunity presents itself of remarking, that jaundice and absence of bile in the alvine discharges, although common, do by no means form essential symptoms of the existence of gall-stones, or of their passage through the biliary ducts to the duodenum.* But, whenever the cysto-hepatic ducts be accurately closed by a concretion, both of these symptoms will be found to prevail, in a degree more or less conspicuously marked.

In speaking of infantile jaundice, our author expresses his belief, that the affection is attributable to the change produced in the circulation of the hepatic vessels at birth, by the closure of the umbilical vein. It may also, in his opinion, arise from influx of bile into the absorbents of the intestinal canal. He considers the meconium to consist entirely of bile which has acquired a dark colour by long residence in the gall-bladder; from whence it is expelled at the child's birth, by the pressure of the diaphragm and abdominal muscles upon the biliary organs, in the first convulsive efforts of respiration.

The valuable results of our author's experience in the *prognosis* of this affection, we shall endeavour to present in a summary and concise form: Jaundice assumes a menacing or incurable aspect, when arising from organic lesions, scirrhus, or abscess of the liver; when a softening of the right hypochon-

* This observation is well illustrated by "a fatal case of vomiting," recorded at page 89 of the eighth volume of this Journal, where, although the *hepatic duct* was found obstructed by several biliary concretions, no feature of jaundice had manifested itself during the patient's illness; and the fæces invariably announced a regular excretion of bile into the duodenum.

drium succeeds a state of induration and enlargement; when manifesting itself in the onset of fevers; when consequent on hiccough or complicated with hectic fever. In the latter case, some suppuration of the biliary organs is commonly indicated.

The issue may, in general, be considered favourable, when jaundice does not originate from organic lesion of the chylopoietic viscera; when it is uncomplicated with hardness and enlargement of the hypochondria, or pain, tension, or tumour in the other regions of the abdomen; when determined by bilious or sanguine congestion of the liver, violent vomiting or indigestion; when attacking young girls at the age of puberty, pregnant, or hysterical women; when caused by the suppression of various established evacuations; when appearing in the decline of fevers, especially if no symptom of abdominal mischief exists; and there be, at the same time, copious discharges of bile from the bowels.

Jaundice, for the most part, yields more readily, when of the yellow than of the black species; when the consequence of sudden and violent, than of long-existing mental disturbance; when occurring in tertian, than in quartan intermittent fevers.

Favourable appearances in jaundice.—The stools, before gray, resuming a proper bilious aspect; the restoration of the urine to its natural colour, the return of the hemorrhoidal or menstrual flux in persons who have experienced a suppression of them; diminution of bitterness of the mouth; universal itching of the skin; cessation of flatulence and colic.

Diarrhœa and dystentery, occurring in jaundice, are unpropitious; and the hemorrhagies, which take place in the disease, are often incurable. Obstinate jaundice generally terminates in dropsy.

We shall not swell out our critique by an enumeration of the medicinal remedies employed by our author, in the treatment of jaundice. A more correct notion of French practice in these affections will, perhaps, be conveyed to our readers, by briefly transcribing a consultation preserved, and in this place presented by M. Portal.

The subject of this case was a man, of fifty years; of strong constitution, but thin. He had been six months jaundiced; he experienced great itching of the skin; his stools were ash-co-

loured; urine thick and of a red brown hue. The liver was much enlarged and indurated; occupying the right hypochondriac, the epigastric, and part of the left hypochondriac regions. To resolve this obstruction by re-establishing the course of the bile, was deemed the principal indication.

Pills, formed of soap, gum ammoniacum, and inspissated gall of the ox, were directed to be taken night and morning, with a decoction of the roots of dock, polypody of the oak, and celandine, in lean veal broth. To the morning dose of this decoction was added a quantity of sal e duobus (sulphat of potass).

The bowels not relaxed after a continuance of this plan for twelve days, and an addition of the neutral salt failing to produce this effect, the patient must take every night, or night and morning, pills composed of rhubarb, jalap, aloes, diagrydium, (a preparation of scammony,) and syrup of buckthorn. These must be continued until the bowels are loose, and their evacuations resume a natural colour.

This object attained, the former remedies are to be discontinued for two or three days; and a purgative potion to be substituted; consisting of a solution of manna and vegetable alkali, in an infusion of senna leaves, coriander-seeds, chervil, and succory, with a sliced lemon.

A mixture of mercurial and hemlock plasters, with *diabotanum*,* to be applied to the whole extent of the abdominal tumour; and renewed every five or six days. The diet of the patient was directed to consist of good animal broth, with bread and vegetables; fresh eggs, preserved apples, &c.: his only drink to be water, in which a few grains of purified nitre have been dissolved.

The jaundice, we are told, was nearly removed by a six weeks' perseverance in this plan: the abdominal tumour had

* The *diabotanum plaster* presents a precious specimen of the pharmaceutical science, simplicity, and vigour of the old French schools. We enumerate in the formula not less than fifty-four ingredients from the animal, vegetable, and mineral kingdoms. Amid these, *oil of worms*, *oil of puppies*, *oil of bricks*, and *pidgeons' dung*, hold a distinguished rank.—A writer, in the Dictionaire des Sciences Medicales, justly stigmatizes it as a monstrous composition.

nearly disappeared. The soap-pills were continued, and the patient directed to swallow every morning, a dose of acetate of potass dissolved in four ounces of clarified juice of succory, borage, and other antiscorbutic plants; and afterwards to repair to the waters of Vichy. "This treatment," observes M. Portal, "was crowned with astonishing success:" at the same time, he has the modesty and candour to acknowledge that it was somewhat too complicated. We surely agree with him.

"In fine," says M. Portal, at the close of this chapter, "it is necessary to inquire, in every species of jaundice, whether there exists not in the liver, the spleen, or the mesentery, some congestion; or some obstruction in the other organs; which may, by its influence upon the hepatic system, disturb those functions essential to the formation and excretion of bile; for, until these obstacles be destroyed, every effort for the removal of the jaundice must necessarily fail."

The result of this writer's experience, as to the regimen of patients in jaundice, is thus summed up:

"It (the dietetic plan) should be strictly observed. A mixture of good animal food, boiled vegetables, and ripe fruit has commonly succeeded in my practice; and for drink I recommend good Burgundy wine, with light infusion of germander (*teucrium chamædrys*) hop or common horehound; or coffee. I forbid ragouts, and especially milk diet, butter, and cheese. The plan of supporting patients on animal food alone, and allowing them wine and spiritous liquors without restriction, I have not found to succeed."

Exercise on horseback is very useful in the treatment of jaundice. Of electricity, as a solvent for biliary concretions, M. Portal thinks unfavourably.

Hepatic colic is treated of in the fourth chapter. Eight histories of the disease are detailed at length; and two others briefly noticed. They possess, in general, an aspect highly interesting to the pathologist. The first six cases exhibited, on dissection, biliary concretions filling the gall-bladder or obstructing the various ducts; abscess of the liver, or both morbid conditions complicated. In the fourth case, there was "an abscess between the abdominal muscles; which communicated, by a sort of ligamentous canal, with the gall-bladder;" and

had allowed, during the patient's life, the escape of mingled pus and bile from a fistulous orifice, externally situated.

The seventh case, from our author's practice, we shall concisely exhibit. Its history and dissection are alike instructive: and the narrative will depict in stronger colours than any language of our's, the inexplicable torpor of French practice, in the most conspicuously marked and menacing forms of liver-disease.

Morbid appearances:—Liver enlarged; in some parts, almost scirrhous; in others, much softened and of a violet colour; its posterior surface blackened; a portion near the gall-bladder in a state of putrefaction: traces of suppuration, and biliary calculi, in its internal structure. Black pitchy bile, with many small concretions, in the gall-bladder. The stomach of a large size; the circumference of the pylorus tumefied; its orifice contracted: the gastric blood-vessels distended with black blood. The spleen very large and full of black blood. The right kidney increased in bulk, and of a red colour.

Symptoms: Nausea; disgust for food, light colics, which the physicians knew not whether to refer to an affection of the liver, or urinary organs; yellowness of the skin favoured the first opinion; pain in the right lumbar region, and slight dysuria, the last. Gravel; rheumatic gout; pains in the right hypochondrium; indigestion; increase of nausea; emaciation; yellowness of the countenance more decided; bitterness of the mouth; bowels very irregular; the stools consisting, at times, of pure bile. Abdominal pains more fixed; often shooting from the region of the gall-bladder to the navel; frequent tension of the epigastrium; continual vomitings; fever; urine of deep red colour, and diminished in quantity; stools suppressed; pains in the right knee and corresponding great toe. Pulse full; region of the liver tense and shining.

In this state the patient was first visited by M. Portal. The hemorrhoidal disposition suggested the application of leeches to the anus. This remedy was twice employed; blood was also drawn from the arm. The symptoms were aggravated. Some anodyne medicines only, we should remark, had been previously prescribed. After venesection, clarified whey, chicken-broth with infusion of lime-tree; ptisan of dog-grass and of

wall-pellitory with nitre; emollient injections and fomenattions; baths, with an anodyne at night, were successively, or otherwise recommended. This treatment was, at first, beneficial; but the storm gathered afresh. The nausea and vomiting increased; the pulse became frequent, contracted, irregular; evacuation by stool and urine was suppressed; the eyes and whole surface of the skin of a deep yellow; hiccough, augmenting in frequency and force, came on; blisters, applied to the legs with the view of producing "a revulsion of the gouty or rheumatic humour," were ineffectual. Aperient and lightly sedative potions with preparations of lime-tree, *gallium luteum*, black cherries, and nitric ether; Sydenham's anodyne drops were prescribed in vain. Oil of turpentine, mixed with sulphuric ether, aggravated the symptoms. Syncope, cold sweat, and delirium succeeded; and death speedily ensued. The unhappy subject of this history was a man of strong constitution; of a florid but, at times, coppery complexion; a great eater; subject to the hemorrhoidal flux. He suffered much fatigue and uneasiness, from his parliamentary situation, during the early gusts of the French revolutionary storm.

An enlightened practitioner of Britain would, we believe, have felt little hesitation in referring the affection of the right kidney, and all the train of morbid phenomena exhibited in this case, to a diseased condition of the liver. The features of hepatic disease have rarely been surveyed in a more clear or unquestionable light. It has never been our lot to observe "gouty rheumatic pains" unconnected with evident marks of disturbance in the right hypochondrium. Do they not affect, almost exclusively, bilious and hemorrhoidal subjects? Are they not frequently complicated with gall-stones and jaundice? Such, at least, are the results of our experience. How differently this ill fated *parliamentaire* might have fared in the hands of a British physician, it would, perhaps, argue an illiberal spirit to surmise: but we will venture to assert that, manfully opposed by leeches, the lancet, the slipper-bath, mercury, opium, saline purgatives, and the carbonated alkalis, the "grim tyrant" would have had a harder and more protracted conflict to sustain.

The eighth case, as peculiarly interesting, and most satis-

factorily elucidated by dissection, we shall also quote. It is taken from the *Historia Anatomico-Medica* of Lieutaud.

Morbid appearances: The liver enlarged, and of a yellow colour; the gall-bladder greatly distended with bile; *a large lumbricus lodged in the cysto-hepatic duct.* Many worms in the stomach and intestines.

Symptoms: Acute fever with tormina; abundant flow of saliva; tumescence of the abdomen, and especially of the right hypochondrium; yellowness of the face and eyes; cardialgia; unequal pulse; white fæces; convulsions: the subject, a boy of fourteen years. Lieutaud cites from Wierius another history of obliteration, or rather obstruction, of the common biliary duct by intestinal worms.

Three fortunately terminating cases of hepatic colic are detailed with great minuteness. The treatment employed in them we shall here not pause to describe. Our time will, perhaps, be more usefully occupied in defining the affection thus designated by our author; and in collecting from his scattered hints, rules of diagnosis proper to aid us in discriminating between hepatic colic and other morbid affections with which it may be confounded.

M. Portal defines hepatic colic to be pain, more or less severe and lancinating, various in duration, and frequently recurring; which occupies chiefly the right hypochondrium, extending from thence to the stomach, the colon, and umbilicus: it has its precise seat in the gall-bladder or biliary ducts.

Hepatic colic arises from obstruction of the biliary ducts, by superabundant or thickened bile, by biliary concretions, or worms; from any cause capable of constricting or exerting compression upon the cysto-hepatic duct, as inflammation, enlargement, or other morbid affection of the stomach, duodenum, or various abdominal organs. It may be produced also by worms, or other matter, irritating the intestinal canal. The proximate cause of the pain is the violent contraction of the diaphragm and abdominal muscles; which may be regarded as an effort of nature to expel from the liver or its ducts, the irritating matter.

The hepatic colic may be distinguished from *hepatalgia*, of which it is a species, by the intervals of ease which the patient

experiences; by the cessation of pain immediately, or very soon after the bowels have been evacuated, especially if the discharge be bilious; by the shooting of the pain from the liver to the navel; and by pressure upon the hypochondrium, which, in the former affection, does not aggravate the pain. It differs from *hepatitis* in the absence of pyrexia; from the *bilious colic* in the situation of the pain, which occupies principally the stomach, small intestines, and colon, in the latter; though sometimes the liver is conjointly affected. A continued fever, of several days' duration, frequently accompanies the bilious colic; and this affection is not, like the hepatic, subject to relapses. The two forms of hepatic and bilious colic sometimes co-exist, although more commonly the latter is consequent on the former.

We must not confound the *nephritic colic* with the hepatic. In the latter, there is no retraction of the testicles towards the abdomen, and the urine is red and thick; while, in the former, it is suppressed or clear, except in the decline of the affection, and sometimes bloody. The symptoms of the kidney affection are not mitigated by alvine evacuation: there is generally fever in proportion to the pain; that pain is increased by the lightest pressure. The hepatic colic sometimes, although much more rarely than the nephritic and other colics, terminates in inflammation.

Sometimes, a marked degree of resemblance exists between the hepatic and the *painters' colic*. The former, however, is characterized by the pain affecting principally the region of the liver, and by its frequently terminating in bilious dejections. The pain in the colica pictonum occupies that part of the colon in the vicinity of the umbilicus, which last is retracted towards the spine. Stools also are rarely obtained; the abdominal muscles in permanent contraction, and the anus drawn up and indurated.

Our author's remarks on *prognosis* in hepatic colic, we shall next present in a brief and concentrated form. The disease generally admits of cure with greater or less facility, when originating from excess, or increased consistence of the bile, biliary concretions, simple plethora of the hepatic blood-vessels,

moral affections, suppressed evacuations; or when occurring in pregnant women.

It is commonly obstinate or incurable, when proceeding from alteration or stagnation of the bile; or when it is the effect of organic lesion of the liver, of abscess, scirrhus, or morbid condition of the pancreas, intestinal canal, or other abdominal viscera. Evening accessions of heat, varying in duration and intensity, and preceded by shiverings, should be vigilantly watched. They portend the commencement of suppuration in the liver, especially when accompanied by a diminution of the colic. *Cholera morbus* and the *iliac passion* sometimes, though rarely, succeed or are complicated with hepatic colic, which then is frequently fatal.

Upon the *treatment* of hepatic colic we shall not pause. It must obviously be regulated by the condition of the patient, and the peculiar circumstances of the malady. We shall content ourselves with enumerating a few of our author's remedies, conspicuous for their impotence or novelty. In the first class may be named whey, veal and chicken broth, which are dignified by the title of relaxing and anodyne drinks; and their virtues occasionally heightened by an addition of anodyne plants. The immersion of a patient "for several hours in the tepid bath, and allowing him to sleep in it," must be referred to the latter.

Anodynes, both by the mouth and rectum, are freely prescribed; and it is the opinion of M. Portal, that when the pain is very severe, they rather favour than oppose, a free evacuation by the bowels. Opiates succeed better in proportion as there exists less fever, less sanguine plethora, or tendency to inflammation. Bleeding from the arm or hemorrhoidal vessels is, our author observes, "useful in these cases, not only by obviating inflammation, but also by favouring the expulsion of the biliary concretions, as it takes off the *erethism* of the biliary tubes, and the compression which the turgid blood-vessels necessarily exercise upon them." Emetics and purgatives are contra-indicated, when an inflammatory diathesis is present. Two ounces of castor oil improperly administered in hepatic colic, our author asserts, dispatched one of his patients to the shades, with all the symptoms of high abdominal inflammation.

The symptoms and progress of *bilious fever* are pourtrayed in the commencement of the fifth chapter with great clearness and fidelity. The contents of the second section upon *prognosis*, we shall, as usual, analyze and exhibit in their most condensed form.

Favourable symptoms: Even pulse; softness of the abdomen; the urine not high-coloured on the onset of the disease, becoming so towards the close; nasal hemorrhage in the early stage; undisturbed respiration.

Unfavourable or fatal symptoms: Excessive or painful vomiting; frequent convulsive agitations, especially if succeeded by drowsiness; vomiting of black matter; dark-coloured urine; respiration laborious, short, interrupted, sighing, stertorous; tension of the abdomen, and sudden softening of it, especially if, at the same time, the patient has not had an evacuation of yellow stools. Deafness, coming on in the commencement, is more inauspicious than in the decline of the disease.

The result of dissections of those who have died from bilious fever is thus delivered by the French pathologist:

"The serous membranes are dry, of a reddish hue, as though disposed to inflammation; sometimes thickened or adherent to each other. Thus albuminous adhesions frequently take place between the dura and pia mater, the tunica arachnoides and the brain. The pleura unites to the surface of the lungs; the pericardium to the peritoneum;* the omentum to the stomach and intestines. Between these membranes also, albuminous concretions, or false membranes, are frequently formed."

"The brain, the lungs, the liver, and other parenchymatous viscera, are of a structure more or less compact, sometimes indurated or scirrhus-like; often in a state of suppuration, particularly the liver. Serous effusions take place in the different cavities, which sometimes contain a concrete, whitish; at others, a purulent matter."

* How could the pericardium and peritoneal membranes adhere in the ordinary structure of the internal organs? We apprehend that it is a typographical error. The passage in the original runs thus: La plèvre (est souvent réunie) avec le poumon, *le pericarde avec le peritoine*, l'epiploon avec l'estomac et avec les intestins. But we imagine, it should rather be read: *La plèvre avec le poumon; le peritoine aves l'epiploon, l'estomac, etc.*

"The gall-bladder is frequently filled with black and highly acrimonious bile, which destroys the colour of certain stuffs, and excoriates the fingers of those who touch it. Morgagni asserts, that animals, and particularly pigeons, have been poisoned by swallowing it. This bile, by its irritating qualities, may produce cholera morbus, with inflammation, erosion, and even gangrene of the intestinal canal."

"The heart is often compact, and diminished in size. The left ventricle, the aorta, and its branches are empty. On the other hand, much black congealed blood, mixed with albuminous concretions, is accumulated in the right cavities of the heart, in the venæ cavæ, vena portarum, and other large veins."

Many inert remedies are mentioned by M. Portal, in the *treatment* of bilious fever. Veal and chicken broth, with beet-leaves, lettuce, and sorrel; clarified whey, infusion and syrup of violets; almond emulsion; syrup of water lily and poppy. On the decline of the disease, he purges the bowels with a mixture of tamarinds and cassia-pulp in whey, or with a few drachms of soluble tartar (tartrite of potass) in weak veal broth; observing, with superstitious reverence, the maxim of Hippocrates, *Purgantia non oportet donec febris remiserit.*

Among the energetic and really valuable remedies, we remark emetics; abstraction of blood from the foot or hemorrhoidal vessels; blisters to the legs; pediluvia, and the tepid bath. Speaking of the latter, our author observes,

"Some of these patients I have left for hours, in an almost cold bath; this practice has been repeated during many successive days with excellent effect, and especially towards night, when there was great restlessness. Patients, whom I have attended in ardent fever with furious delirium, and would drink little, have been kept in the water four, five, or six hours at a time; they were only calm then, and recovered without other remedy. In some cases, where there was intense fever, and universal burning heat, I have advised the patient to be plunged, for eight or fifteen minutes, into the cold bath, with signal advantage. But, in general, the luke-warm bath*, long continued, has seemed to succeed better than any other,

* Les bains dégourdis. Baths with the chill just taken off.

especially when the functions of the brain were more or less disturbed. This morbid state frequently depends upon congestion of the cerebral blood-vessels, which the cold bath would only serve to aggravate."

We now come to the sixth chapter on *bilious colic*. It opens with three histories of the disease, borrowed from *Valsalva* and *Bianchi*. Dissection showed, in the first, extensive inflammation of the small intestines and serous effusion in the ventricles of the brain; in the second, inflammation and lividity of the intestinal canal with many "black spots" on the peritoneum; in the third, effusion of pus into the peritoneal cavity; sphacelus of the small intestines, especially the ileum, and of the neighbouring parts of the mesentery and mesocolon.

The results of a fourth case from our author's practice, we present with our wonted conciseness to the reader.

Morbid appearances: Duodenum highly inflamed and internally excoriated; the other small intestines of a very red colour; the colon affected with inflammation; the stomach marked with blackish gangrenous specks; considerable effusion of reddish fluid into the peritoneal sac; the liver enlarged, red, and indurated; the gall-bladder filled with blackish bile.

Symptoms: Violent pain in the umbilical region, after scanty but severe vomitings of bile, felt principally in a transverse direction, between the stomach and navel, a little to the right and deeply seated; hard but useless efforts to vomit; afterwards, copious evacuation of bile by the mouth and rectum; accession of fever with daily exacerbations; the abdomen universally painful and tense; the tongue red, and vault of the palate covered with aphthæ; disease terminating fatally on the sixth day. The subject of the case, a stout man, aged 40; attacked during the heats of summer. He had used violent exercise, after eating a large quantity of unwholesome fruit, and indulging unduly in wine and spirits.

We subjoin the practice employed in this case. Remedies: Weak infusion of chamomile; emollient injections; anodyne julep; injections made purgative with mercurial honey; chicken broth; tepid bath; infusion of lime-tree and other antispasmodic plants; orange-flower water, with Hoffman's anodyne (spiritus ætheris sulphurici compositus) and Sydenham's anodyne drops (a vinous preparation of opium.)

In his remarks upon the nature and causes of bilious colic, M. Portal draws the line of distinction between this affection and the hepatic colic. The latter has its seat in the internal biliary tubes of the liver, in the gall-bladder, the cystic, hepatic, or common ducts, and is not accompanied by pyrexia. The former seems to affect originally the duodenum, but often extends consecutively to the small intestines and colon; and fever, he adds, for the most part attends it. Yet, with an inexplicable want of consistency, M. Portal asserts shortly afterwards, that "bilious colic is frequently without fever."

Our author attributes the production of bilious colic to the superabundance and acrimony of the hepatic secretion, which thus becomes unduly stimulating to the duodenum and whole intestinal canal. Severe pain in the region of the duodenum; cardialgia; obstinate constipation or exhausting diarrhœa, with tenesmus, nausea, flatulence, vomiting of aliment or bile; convulsion of the trunk and extremities, constitute principally the assemblage of symptoms. The pulse is frequent, unequal, but not hard or strong, as in hepatic inflammation, which hence may be distinguished from bilious colic. When fever is present, flushing in the hands and feet; increased weight and temperature of the head; giddiness; bitter mouth; are experienced. Hiccough, vomiting of black matter, and syncope, are the usual forerunners of dissolution. The disease is frequent in warm climates, especially during the fruit season. Violent exertion of the mental or corporeal powers; excesses in diet; indulgence in spirituous liquors or highly seasoned food, and the use of bad butter or putrid fish, greatly favour its attacks. Infancy and manhood are more prone to it than advanced age. It affects persons of a bilious temperament, melancholics, and hysterical women, more frequently than others.

Bilious colic is evidently considered by our author as a spasm of the intestinal canal, and particularly of its duodenal portion. On this point of doctrine, we cannot entirely accord with our author; for although the affection, induced by the too stimulating or other morbid properties of the bile upon the alvine tube, be at first purely spasmodic, as we are willing to allow it may be, yet we are persuaded, that it never assumes a severe or a menacing aspect, without the occurrence of inflam-

mation, in a degree more or less decided. The mucous membrane of the duodenum is, we believe, the precise seat of this inflammation; and while it remains confined to these limits, no tension of the abdomen is manifested. But the inflammatory action diffused to the ileum, the features of iliac passion are developed: again, it may, under some circumstances, pervade the whole track of the intestines, involve their peritoneal covering, and thus extend to the layer of that membrane which lines the abdominal muscles. In this event, tension of the belly, and all the dire phenomena of enteritis, display themselves. Hence, the gangrene, sphacelus, serous or purulent effusions, evident consequences of increased action, which have commonly been shown by dissection to exist in these cases. Let us turn and observe how completely the observations and histories of M. Portal confirm our reasoning upon this question of pathology.

"Frequently," he writes, "these colics (bilious) have been so inflammatory as to terminate in suppuration or gangrene of the bowels, or abscesses of some part of the abdomen." Again: "There is often no tension of the abdomen; this serves to distinguish it from a state of inflammation; yet inflammation, nevertheless, sometimes takes place in bilious colic. Then cholera morbus, or the iliac passion, is its frequent consequence."

In this view, the cases and dissections which we have noticed in the beginning of this chapter, particularly the fourth, from our author's observation, are at once clear and conclusive. The internal *excoriation* of the duodenum; the inflamed state of the other small and large intestines; the gangrenous spots of the stomach, and peritoneal effusion, are phenomena, the origin and order of which, no one availing himself of the attendant light of clinical observation, can surely mistake.

The only important remedies which we notice in the section, *Treatment*, are vomits, to be employed only when there exists no fever, nor severe pain and tension of the epigastric region; emollient and anodyne injections; abstraction of blood from the arm or hemorrhoidal vessels. British practitioners would, we presume, in a disease like this, prefer calomel to "magnesia," and blisters and the hot bath to "chicken-broth"

and "tamarind-water." Infusion of nut-galls, alum, and cream of tartar, are recommended as prophylactics. There are endless repetitions and much obscurity in this chapter. We rejoice in having reached its close.

Inflammation of the liver and its consequences forms the important subject of the seventh chapter. It occupies almost seventy pages. Nineteen histories of this affection are quoted from various pathologic writings. In all of them, the liver displayed inflammation or its evident effects. The substance of the organ, in two of them, was found utterly destroyed. Four of them were complicated with inflammation, adhesion, induration or abscess of the lungs, and thoracic or pericardial effusion: two, with inflammation or gangrene of the diaphragm: four, with the existence of gall stones: three, with enlargement or gangrene of the spleen; in one instance, this viscus adhered to the enlarged liver: two, with lividity and gangrene of the stomach from previous inflammation: four, with inflammation and gangrene of the intestines, or peritoneal effusion: one, with destruction of the omentum: one, with contraction of the aorta in its thoracic and abdominal portions. This last we are inclined to consider an adventitious circumstance, wholly unconnected with the morbid state of the liver.

Three of these cases we shall concisely exhibit. They possess considerable interest; and the works, in which they are originally recorded, cannot be accessible to the generality of our readers.

1. Morbid appearances: The substance of the liver utterly destroyed, its membrane only remaining, sac-like; the parietes thickened, and containing a quantity of fluid like the washings of flesh. Symptoms: Hepatitis, followed by the *fluxus hepaticus* of six months duration; extreme marasmus; discharge per anum of fluid, resembling that discovered, after death, in the hepatic cyst. Subject, an adult male. *Bontius*, *Lieutaud*, 787.

2. Morbid appearances: Liver enlarged; externally, of a red-brown colour, internally, quite filled with fœtid pus, "so as to resemble, on the evacuation of this fluid, an hollow sac: the gall-bladder so enormously elongated as almost to touch the crest of the os ilium, and filled with a blackish fluid; the intestinal canal distended with air; the colon much dilated at its

extremities, but greatly contracted in the vicinity of the spleen. Symptoms: Hepatic inflammation, apparently cured; in the progress of convalescence, shiverings; recurring every evening, and succeeded by increased heat; the surface of the body assuming universally a deep red colour; the urine also becoming red; progressive emaciation; shiverings more frequent; fatal syncope. Subject, a man of 48 years. *Hasenorhl, Histor. morb. Epist.*

3. Morbid appearances: Body emaciated; omentum destroyed; liver inflamed on its concave surface, and verging towards gangrene; the internal membrane of the stomach affected with putrefaction; the lungs dry and universally adherent to the costal pleura; the pericardium dry, and the heart flabby and emaciated. Symptoms: *Hydrophobia*, with utter incapability of swallowing a drop of liquid; accession of fury on the third day, with inundation of the salivary secretion, and constant spitting at the attendants. Convulsions and sudden death, as by suffocation, on the fourth day. Subject, a stout man, of middle-age. *Brecktfeld, Lieutaud*, 599.

We are not informed whether this last deplorable malady was consequent on the bite of a rabid animal. Immediately afterwards, M. Portal observes: "I have seen, with M. Salmade, real hydrophobia supervene in hepatic inflammation. It was successfully treated by venæsection, soothing and cooling remedies; and subsequently, anodynes and opiates."

Ten other histories are here also presented from our author's observation, and five borrowed from the works of Lieutaud and Bertrandi. They are intended principally to illustrate the connexion and co-existence of hepatic and pulmonary inflammation. Sometimes the liver and lungs are simultaneously attacked; sometimes the phenomena of hepatitis are consequent on those of pneumonia; but more frequently, according to the experience of M. Portal, the liver is primarily, and the thoracic organs secondarily, affected by the inflammation.

The results of two of our author's most instructive cases we shall concisely exhibit.

1. Morbid appearances: Liver greatly enlarged and indurated, adherent to the diaphragm, stomach, colon, and universally to the peritoneum, by false ligaments: presenting internally seve-

ral abscesses: the gall-bladder containing black bile and many gall-stones; much fœtid water in the peritoneal sac; right lung unusually red, compact, and adherent to the costal pleura; the heart and cerebral vessels turgid with blood. Symptoms: Pain in the inferior part of the thorax and epigastric region, extending afterwards to the right hypochondrium and summit of the right shoulder; nausea; slight cough and bloody expectoration; palpitations and tremor of the heart; abdomen tense; urine very red, but copious; enormous evacuation of yellow serum, tinged with blood, by the rectum; death on the ninth day of the disease. Subject: A man of thirty years, thin, and naturally of a sallow complexion.

2. Morbid appearances: Liver of a prodigious size, and soaked, throughout a greater part of its extent, in bloody serum, but indurated in its anterior border; that portion of the diaphragm to which it adhered, greatly inflamed; its superior (diaphragmic) surface covered by a layer of false membrane: the spleen enlarged and gorged with black blood: much blood in the vessels of the lungs: the heart much dilated and full of blood, particularly the right (pulmonary) auricle and ventricle: the uterus large and filled with blood. Symptoms: Indigestion; frequent pains of the head, and nasal hæmorrhage; repeated hæmoptysis: afterwards, difficult respiration, aggravated on the approach of the menstrual flux, commonly very abundant; this discharge suddenly suppressed by mental commotion; immediate accession of violent vomiting, with severe pain in the epigastric region, *subsequently* extending to the whole right hypochondrium; jaundice; incapability of lying on the left side; abdomen becoming tumefied and hard; urine very black; hiccough with extreme dyspnœa supervening; pulse very hard and frequent; internal sensation of great heat, the surface of the body and extremities retaining their ordinary temperature: the progress of the disease to its fatal termination rapid. Subject: A lady, aged twenty-eight years.

It seems to be the opinion of M. Portal, that in these cases, as in all where the liver and heart are suffering from co-existent enlargement, the first of these organs is primarily affected, the latter in a symptomatic and consecutive manner. On this subject we do not entirely accord with the French pathologist.

In the former of the preceding cases, we believe the liver to have been the original seat of morbid action; in the latter, the heart: and we imagine that any one, who contemplates with an unprejudiced eye the train of external phenomena which they respectively exhibit, will adopt the same conclusion. That a complication of diseased heart and liver exists much more frequently than is in general suspected, we have long been aware. It is a point of inquiry which has occupied recently much of our attention. The light we have already drawn from it, although at present feeble and imperfect, has served to explain to us some very mysterious features in the progress, some vexatious occurrences in the treatment or termination, of hepatic maladies: and we feel ourselves justified in stating an opinion, that, where certain forms of liver-disease and organic lesion of the heart are complicated, it will very often, though not invariably, be discovered, upon the minute and comprehensive examination of an intelligent patient as to the origin of his complaints, that the symptoms of cardiac derangement were *first*, those of the hepatic affection *subsequently*, manifested. On these interesting considerations we shall not now pause. We are shortly to discuss them in a direct and extended manner.

Ere quitting this department of our author's work, we shall transcribe from one of his notes some observations on pulmonary and hepatic abscess, which we deem alike novel to many of our readers, and deserving to be remembered and reflected upon by all. The perusal of them will sufficiently apologize for their introduction:

"In a body brought in for the purpose of my anatomical demonstrations, I discovered an enormous abscess of the liver; which, after having contracted adhesions to the peritoneum, opened posteriorly between the lumbar and abdominal muscles: the contained pus had found its way along the ribs *to the axilla*. In my work on pulmonary phthisis, I have recorded the history of an abscess, which had formed between the pleura and the ribs. It was believed, at first, to be empyema; but this was not the case. I have also discovered, upon dissecting a body, a large abscess of the right lung; which, a strong adhesion having been established between the

costal and pulmonary pleura, had found a passage between the intercostal muscles and *serratus major anticus. Thus abscesses of the liver and pulmonary organs may resemble, and be confounded with, each other in the passage of their contents from the abdomen and from the thorax.*"

Nine fortunately terminating cases of hepatic imflammation are given from our author's practice in the second section. These we shall pass by almost without comment. A section upon "treatment," just before us, will exhibit more concisely the essence of these histories. They are detailed with great minuteness, and occupy many pages.

The third section, containing *remarks on the preceding cases*, is without interest. From the fourth, entitled *symptoms*, we extract the following judicious and correct observations upon the varieties of the pain in hepatitis, according to the particular part of the liver occupied by the inflammatory action. When the inflammation affects the right lobe of the liver posteriorly, near the vertebral column, the pain is felt there, and extends to the posterior part of the thorax; and hence the disease has often been mistaken for *dorsal pneumony*. The inflammation attacking the liver lower down and towards the right, has been thought to be seated in the right kidney, or in the stomach, when the horizontal epigastric portion of the hepatic organ was exclusively suffering from it. In fact, the existence of inflammation in the duodenum and colon has been suspected, when the disease was wholly restricted to the concave part of the liver. Pains of the abdomen, thorax, and particularly of the extremities proceeding from the morbid liver, are considered rheumatic." M. Portal contends, that the occurrence of jaundice in hepatitis does not unequivocally announce inflammation of the concave surface of the liver. "With respect to this symptom," he remarks, "there is nothing constant: doubtless, it happens when the biliary tubes are more or less obstructed by the disease." He insists also upon the impossibility of deciding, from a view of the external signs of hepatitis, from the nature of the pain or the pulse, whether the membrane of the liver or its internal structure be the site of the inflammation. Dissection, he asserts, has repeatedly exposed the futility of these undue refinements in diagnosis. The accuracy of these assertions is, perhaps, questionable.

Inflammation of the gall-bladder may, in the opinion of M. Portal, be more readily distinguished from that of the liver, than inflammations of the different parts of the latter organ from each other; but no rules are delivered to aid us in this discrimination. This disease, "even when resolution cannot be accomplished, does by no means necessarily terminate in suppuration or gangrene. Induration of the biliary reservoir may take place; and hence proceed other chronic disorders, as vomiting and colic: the stomach, when distended with aliment, not being competent to effect, by ordinary pressure, the due expulsion of the bile from the indurated sac."

The prompt employment of the lancet, injections, the (warm?) bath, and antiphlogistic regimen, are indicated in inflammation of the gall-bladder, to prevent rupture and fatal effusion of bile into the peritoneum. Sometimes, however, adhesion takes place between the inflamed viscus and the peritoneal membrane; and pus, bile, and even biliary concretions, are evacuated externally by a fistulous opening in the abdominal muscles. Nothing worthy of note occurs in the fifth section, *on the causes of hepatic inflammation.*

From the sixth section, on *Prognosis*, we shall present, in a condensed form, whatever of the interesting or important it may afford. Hepatitis, at all times dangerous, is peculiarly so when complicated with inflammation of the lungs or diaphragm, of the stomach, right kidney, splee., or other abdominal organs; when arising from scrofulous, scorbutic, and certain other morbid conditions of the system; when not yielding to timely and repeated venesection; when latent and insidious. It is almost always fatal, when terminating in abscess or gangrene. Hectic fever, obscure pain and weight of the right hypochondrium, œdematous swellings of the lower extremities, and diarrhœa, are fatal symptoms in the latent form of hepatic inflammation.

Hepatitis assumes a less menacing aspect when the consequence of simple sanguine plethora, especially if evacuation of blood from the bowels supervene;—when complicated with a gouty or rheumatic diathesis; because, by judicious treatment, the disease may be then diverted to the extremities; when manifest and decided in its attack. Chronic hepatitis is more

unfavourable in the male subject than in the female, who has not yet passed the period of menstruation; because, in the latter, an evacuation, highly salutary with respect to the morbid liver, may be operated at the menstrual period, or in the process of fortunate parturition.

Unfavourable appearances in hepatitis: Hæmorrhoidal flux, occurring late in the disease, and preceded by shiverings and softening of the pulse; discharge of blood by the anus, proceeding from destruction of the hepatic vessels in consequence of suppuration; frenzy; profound stupor. Favourable appearances: Copious discharge of blood from the hæmorrhoidal vessels early in the attack; abundant evacuations of healthy bile by the bowels, or of blood issuing from the dilated hepatic arteries; nasal hæmorrhage, especially when occurring from the right nostril.

Disease of the liver may be suspected, and its consequences are justly to be feared, when, after morbid affections of the head, falls, or blows, particularly such as implicate the encephalon, jaundice ensues, with disorder of the digestive functions and colic.

Dropsy, the frequent consequence of hepatic inflammation, is to be dreaded, when after this disease the countenance remains discoloured; when œdema of the lower extremities, obstinate indigestion, emaciation, slight fever, muscular debility, disordered respiration, and a slow, soft and unequal pulse are noticed. The danger of this termination will be more urgent in proportion as the secretions of the skin and kidneys may be diminished.

The last section of this chapter comprehends *the treatment of hepatic inflammation.* Abstraction of blood from the *right* arm, from the foot, from the hæmorrhoidal vessels by leeches, or from the right hypochondrium by cupping-glasses, injections, fomentations, blisters, constitute the principal remedies in French practice, during the active stage: afterwards, mild aperients, as the neutral salts, the waters of Vichy, either alone or mixed with whey or chicken-broth, tepid baths, &c. Purgatives are only indicated when disgust for food, or loaded tongue, shows that digestion is faulty; and then they must be of the mildest kind, as manna, tamarinds, cream of tartar.

"Purgatives are to be dreaded, lest they should increase or re-excite the irritation of the liver."—The stimulating system of Brown, and the modern mercurial practice of the English schools, in the inflammatory stage of hepatitis, are equally reprobated by our author. When shivering and irregularity of the pulse denote impending suppuration, he prescribes infusion of cinchona with nitre (nitrate of potass).

With the view of removing obstructions of the liver, consequent on inflammation, and preventing suppuration and scirrhus, our author administers internally assafœtida, bitter extracts, aloes, the juices of borage, succory, and other antiscorbutic plants, with or without the acetate of potash, vegetable aperitives, mercurial preparations, mineral-waters, of the laxative and diuretic rather than those of a purgative and tonic quality: and employs externally mercurial frictions.

Some remarks upon *suppuration* and *scirrhus* of the liver terminate this chapter. Symptoms of inflammation undiminished at the end of from four to eight days after their accession (the time varying according to their intensity); pulse continuing hard and irregular; absence of cutaneous moisture; constipation; region of the liver indurated; sensation of deep pulsatory motion in that part, or discovery of it by external examination; these are the signs which portend the formation of matter in hepatitis. The last of these phenomena has sometimes been mistaken for aneurism.

The following appearances prove, beyond doubt, that suppuration has taken place:—Sensation of weight, and of obtuse, instead of the preceding acute, pain in the right hypochondrium; irregular shiverings succeeded by hot fits; evening-heats in the palms of the hands and soles of the feet; nausea; vomiting; nocturnal, or rather morning sweats; extreme weakness; syncope; and real hepatic phthisis. Sometimes, the abscess may be distinguished by external examination, in the epigastric region, below the inferior border of the last false ribs of the right side. A pasty softening, more or less extensive, surrounded by a firmer substance, indicates its situation; but if this correspond to the site of the gall-bladder, the diagnosis may become difficult. The existence of an abscess would, however, be clearly demonstrated by the concurrence of three circumstances:—a

pre-existing state of inflammation, the sudden formation of the tumour, and the certainty that the patient had never suffered from *hepatic colic*, nor had passed *biliary concretions*.

Opening its way through the diaphragm, commonly in the interval surrounded by the coronary ligament, the pus of an hepatic abscess may be effused into the thorax, or it may escape into the cavity of the peritoneum, and death is the consequence: Sometimes, however, it is discharged externally by a fistulous opening between the abdominal and lumbar muscles: or is evacuated into the duodenum by the cysto-hepatic duct; or, aided by the fortunate process of adhesion between the liver, peritoneum, and other neighbouring parts, it is poured into the stomach or the colon, and thus passes off by vomiting or stool.

Our author enumerates, among the principal symptoms of hepatic scirrhus, colic; sensation of dragging in the epigastric region; constipation of the bowels or diarrhœa, sometimes alternating; disordered respiration; swelling of the inferior extremities, sometimes in the right foot only, particularly towards evening; the face puffed in a morning; urine scanty, red, with sediment; ultimately ascites. At other times, the scirrhus terminates in suppuration and ulceration. Hectic fever, diarrhœa, night sweats, and marasmus, signalize this fatal process.

An eighth chapter, *upon hepatic phthisis in general*, closes the first part or division of the work. We, perhaps, cannot convey to our readers a more correct notion of what is meant by wasting or consumption of the liver, than by presenting our author's definition of the *symptoms* in his own language.

"The symptoms are, in the first place, those which are common to phthisis of the other organs, as emaciation, hectic fever, sweats, colliquative diarrhœa. Secondly, those which are proper to this species of phthisis, as pain, of various duration, in the region of the liver, of the stomach, the spleen, the kidnies, and thorax; about the lower part of the neck, and top of the right and sometimes of the left shoulder, extending to the arms, or felt transversely in the middle of the chest, or confined to the lower boundary of this cavity; indigestion; loathing of food; flatulence; colic; difficulty of reclining upon the left side; jaundice or yellow tinge of the complexion; urine red;

countenance red and bloated; itching of the skin; tightness of respiration, especially in ascending stairs; in many cases, palpitations of the heart; syncope; œdema of the extremities, sometimes of the right only, but more frequently of both inferior, and afterwards of the superior limbs, with effusion into the cellular membrane of the trunk; and commonly, at last, into the various cavities."

These symptoms vary somewhat in their combination and intensity.

In hepatic phthisis, the prognosis is, for the most part, unfavourable. When purulent secretion is once established in the structure of the organ, the case may be considered, with some very uncommon exceptions, hopeless. Several of its species, especially if the hectic fever be established in a decided manner, seem utterly incurable; some, even in their earliest stages.

Yet a feeble hope of a fortunate result may be indulged, if suppuration of the liver have taken place in a strong man, consequent on an external cause, and without hectic fever; if the abscess burst externally, or present so as to become accessible to surgical operation; but even here, the result must be exceedingly dubious. The only chance of treating with success the disease from an internal cause, is to assail it immediately on its origin; but the termination will be, in general, fatal. Diarrhœa and colliquative sweats announce approaching dissolution. Wasting of the liver is very frequently the consequence of unsubdued hepatitis.

The liver, in persons who have died from hepatic phthisis, is found variously diseased; sometimes in a state of suppuration so universal, that the whole internal structure of the organ is destroyed, the investing membrane remaining entire, or ruptured in one or more places, and the pus consequently evacuated into the abdomen, stomach, intestines, or thorax. One centre of suppuration, variously sized, may exist alone, or there may be great numbers of them, superficial or deeply seated; isolated or communicating together. These abscesses are frequently contained in excavations of the liver, the parietes of which are irregular, and more or less corroded. The pus contained in them varies greatly in colour, consistence and other physical properties. Different parts of the liver often fall suc-

cessively into a state of induration and suppuration; so that on examining, after death, a victim of this disease, the process of morbid alteration may be seen in all its various degrees and stages. Sometimes the liver is partially or universally indurated; sometimes interspersed with *graniform concretions* of different sizes and consistence, of a reddish or white colour, entire, or affected, more or less completely, with suppuration.

M. Portal has seen, in subjects who have died of the most clearly-marked form of hepatic consumption, "the liver greatly hardened, and full of variously-sized *granulous concretions;* their consistence such as to resemble *verrucous* indurations of the skin." He has observed "other portions of the liver, the internal structure or surface of which displayed a kind of *caruncles*, red or black in colour: from which a quantity of blood flowed on light pressure, as from compressed piles."

The liver may be greatly enlarged in hepatic phthisis, so as to occupy an enormous space in the abdomen, and produce alarming or fatal symptoms by compression and derangement of the other abdominal, or of the thoracic viscera. This enlargement may implicate one lobe, or one part of the liver only, so that the figure of the organ may be variously altered. On the other hand, the liver may be diminished to a fifth or sixth part of its original size. This change may take place irregularly, and be complicated with softening, rather than induration, of the organ, though the latter frequently occurs in a very great degree. The liver has been found nearly destroyed by ulceration, commencing internally or externally, either upon the convex or concave surface. The substance of it has been seen affected, *at the same time*, with softening and induration in different parts.

Adhesions of the liver to the several abdominal organs are very common in hepatic phthisis; whether it be the consequence of hepatic inflammation, or result from a scrofulous taint. These adhesions may be formed between the original membranes of the different viscera, or by intermediate membranes of new formation. The latter are very common, and are often in a state of ulceration.

The liver, in hepatic phthisis, is rarely in a solitary state of disease. Either itself has become affected by some morbid

change of the neighbouring organs; or the malady, originating in it, has been subsequently propagated to them. The vena portarum too, in these cases, is commonly found more or less dilated, and gorged with black blood. Nor to the abdominal organs only are these morbid alterations confined: the lungs, heart, and brain, are frequently found diseased in the subject of hepatic phthisis; but whether the lesions, detected in them, took place simultaneously with, or subsequently to, that of the liver, it is often difficult, if not impracticable, clearly to determine.

Effusions of various fluids in the peritoneal cavity have been noted in this disease, and probably decided the fatal termination; as, under these circumstances, the morbid alteration of the liver has many times been far from having attained its most advanced and mortal stage.

While some patients pass on to the last stage of hepatic consumption, and perish with all the symptoms characteristic of that advanced period, marasmus, diarrhœa, and colliquative sweats; others there are, suddenly cut off by morbid affections arising in some contiguous or more remote organ, during the progress of the primary, or at least predominant, disease; such as vomiting of blood, *melæna*, anasarca complicated with ascites, hydrothorax, effusion into the brain, dysentery, cholera-morbus, iliac passion, &c. Thus hepatic phthisis, in its progress and in its close, is alike dangerous.

The *treatment* of this affection will not detain us long. As this is rarely an essential or independent malady, it is necessary to investigate its causes, so as, if possible, to obviate them, to retard its progress, or attempt its radical cure. Each peculiar species, if it can be determined, must be combated by appropriate treatment. The occurrence of the disease from hepatitis will be most certainly prevented by repeated bleedings. Sinapisms, blisters, sudorifics, and alteratives, are indicated in hepatic phthisis with a gouty or rheumatic diathesis: aperients and diuretics, when it is complicated with dropsy: the prompt re-establishment of certain evacuations, when the hepatic disease is induced by their suppression.

The external remedies are relaxing, anodyne, or stimulating cataplasms; counter-irritation by blisters, *moxa*, setons, to pre-

vent internal suppuration. If this process be, however, determined, notwithstanding every effort to prevent it; and the collection of matter, presenting externally, can be clearly distinguished from the tumour formed by a distended gall-bladder, its contents should immediately be discharged by a surgical operation.

We had nearly forgotten to mention that M. Portal, in citing the general results of dissection in *hepatic* phthisis, makes the following assertion: "sometimes, no trace of ulceration or suppuration can be detected in the *liver:* in the same manner, *pulmonary* consumption may occur without any suppuration of the *lungs*." This sentence we do not accurately comprehend. We wish that our author had entered into an explanation of it. Here the first division of the work terminates.

The second part, upon *the condition of the liver in various maladies, which are believed to have their origin in other organs; and which terminate, for the most part, in phthisis of the hepatic viscus*, occupies three hundred and twelve pages: twenty-two articles, of considerable interest and merit, are comprehended in it. They are thus arranged and entitled:

Art. 1.—On the condition of the liver in some catarrhal affections, and the hepatic phthisis consequent on them.

Art. 2.—On the condition of the liver in eruptive diseases, and the hepatic phthisis which frequently succeeds them.

Art. 3.—On the condition of the liver from a scrofulous taint, and the scrofulous phthisis.

Art. 4.—On the state of the liver in syphilitic diseases, and hepatic phthisis from the same cause.

Art. 5.—On the state of the liver in scorbutic disease, and on the hepatic phthisis succeeding it.

Art. 6.—On the state of the liver in gouty and rheumatic affections, and on the hepatic phthisis frequently succeeding them.

Art. 7.—On the state of the liver in rickety subjects, and on phthisis of the liver from this cause.

Art. 8.—On the state of the liver after violent emotions of the mind and severe pain.

Art. 9.—On the state of the liver before, during, and after intermittent, remittent, or continued fevers; and on the phthisis of the liver frequently supervening.

ART. 10.—On the condition of the liver in some dropsies.

ART. 11.—On the condition of the liver in some persons who have experienced great difficulty in respiration.

ART. 12.—On the state of the liver after palpitations of the heart, syncope, and angina pectoris (stenocardia.)

ART. 13.—On the condition of the liver in some persons who have been troubled with nausea, indigestion, and different evacuations by stool and vomiting.

ART. 14.—On the condition of the liver after bilious vomitings.

ART. 15.—On the condition of the liver after vomiting blood.

ART. 16.—On the condition of the liver in some persons who have suffered from *melæna.*

ART. 17.—On the condition of the liver after diarrhœa.

ART. 18.—On the condition of the liver in persons who have died of dysentery.

ART. 19.—On the condition of the liver after evacuations of pus by stool and vomiting.

ART. 20.—On the condition of the liver in persons dead of the hepatic flux (hepatirrhœa.)

ART. 21.—On the condition of the liver in persons dead of cholera-morbus, or of the iliac passion.

ART. 22.—On the condition of the liver after contusions of various parts, or violent exertions of the body.

It would afford us pleasure to exhibit to our readers, in an English dress, some of the more luminous and instructive of these articles. But our examination of the work has already been extended to a great, perhaps, by some considered an unprofitable, length: hence, we must content ourselves with a simple enumeration of them.—Probably, the selection department of our subsequent numbers may be enriched with extracts from some of the most valuable. The motives which have excited us to an examination thus protracted and minute are, at least, laudable. They who, unacquainted with the language, or scared by the bulk of the original work, would have remained strangers to its contents, may find much of its most important matter concentrated in our pages.

In perusing the labours of M. Portal, various feelings have

been excited within us. We have found much cause for admiration and applause—too much for reprehension and regret. Wearisome diffuseness and repetition in style, cast a deep and unfriendly shade over a production, the intrinsic value and excellencies of which yet shine conspicuous amid these accumulated defects. The author is probably far advanced in years. We imagine that, throughout his work, may be descried the traces of a mind, which, although damped by age and infirmity, must have been splendid in its meridian. The "Maladies du Foie" may, in fact, be regarded as a valuable accession to the records of morbid anatomy. And we are persuaded that any man, who, sufficiently versed in pathology, and expert in the art of translation, should present this work, stripped of all superfluous ornament and circumlocution, to the English reader, would acquire credit for himself, and confer an important benefit upon the profession. Arrangement of the numerous cases and varieties of organic lesion, according to the *essential* phenomena exhibited by them in the living subject, would, perhaps, enhance the utility of such a work. And these, with all the valuable observations of the celebrated professor, properly condensed, might be comprehended in a volume, little more than half the bulk of the original. In the mean time, the long and laborious analysis we are just closing, will, it is presumed, afford to our readers an impartial and tolerably correct view of the French doctrine and practice in morbid affections of one of the most important and frequently deranged organs of the animal economy.

Traité des Poisons, tirés des Règnes Minéral, Végétal, et Animal, ou Toxicologie Générale, considérée sous les Rapports de la Physiologie, de la Pathologie, et de la Médecine légale. Par M. P. Orfila, Naturaliste Pensionnaire d'Espagne, Docteur en Médecine de la Faculté de Paris, Professeur de Chimie et de Physique; Précédé du Rapport fait à la Classe des Sciences Physiques et Mathématiques de l'Institut de France.—Tome I. Ire Partie. pp. 304. IIe. Partie. pp. 325. 8vo. Paris, 1814.

[From the Edinburgh Medical and Physical Journal for January, 1815.]

These two volumes treat of the corrosive and exsiccant poisons, and are but part of a complete treatise on poisons which the author intends to publish. From the specimen he has given us, we shall be impatient to possess the whole, although we can by no means agree with the committee of the Institute of France, appointed to report on M. Orfila's manuscript, in the general censure thrown upon all preceding writers on toxicology. It is evident that both the author and the reporters were unacquainted with some of the best writers on the subject, and especially with the laborious and correct compilations of Gmelin,* whose research scarcely a single fact then known has escaped. In correcting this historical error, we have not the least intention of detracting from M. Orfila's merit, which we fully appreciate.

In his general arrangement and classification of poisons, M. Orfila has followed Fodéré; but as he seems to be sensible of its errors, and only to have adopted it because he was not prepared to substitute one of his own, we shall not stop to criticise it.

M. Orfila begins his work on corrosive poisons, with an account of their *general* action, the general symptoms, and the organic lesions produced by them, and their general treatment.

* Gmelin (Johann Friedrich) Allgemeine Geschichte der Pflanzengifte. Zweite vermehrte Auflage. 852 pp. 8vo. Nurnberg, 1803.

——————————— Allgemeine Geschichte der thierischen und mineralischen Gifte; mit einer Vorrede von Blumenbach. Zweite Auflage. 391 pp. 8vo. Erfurt, 1811.

In this part of his work M. Orfila has completely failed, and we believe it is impossible to succeed in it. The action of each poison is so exceedingly various, according to the circumstances under which it is exhibited, and the state of the system on which it acts, that it seldom admits of being generalized; but a general description of the effects and treatment of corrosive poisons, under which denomination are included many substances, having very little analogy in their action, and some acting upon totally different principles, must either be so vague as to convey no information, or must consist of an assemblage of errors.

In treating of the individual poisons, M. Orfila speaks in succession of their chemical and physical properties—their physiological action—the general symptoms they produce, illustrated by cases—the organic lesions they produce—the application of the preceding facts to the different cases which may occur in medico-juridical practice, and the manner of counteracting their effects, with an inquiry into their alleged antidotes.

The facts relating to the physical and chemical history of each poison are well chosen, and perspicuously narrated and explained; but we were particularly pleased with finding an accurate account of their habitudes, with many vegetable and animal matters, for which the best systematic works on chemistry will be consulted in vain, although their knowledge is of the greatest importance to the juridical physician. Every chemical writer describes the manner of detecting the usual mineral poisons, and their action upon various reagents; but their description is taken from experiments made upon the substance in a simple state, or dissolved in water. In juridical practice the circumstances are totally different. The substance and its quantity are not only unknown, but it is almost always mixed with other substances, which suspend or alter the common effects of reagents upon it; so that our knowledge of pure chemistry may sometimes mislead us. The perusal of M. Orfila's work cannot fail of convincing every physician of the necessity of studying the objects of juridical chemistry more minutely than the general chemist will ever condescend to do.

Corrosive sublimate is decomposed, sooner or later, and con-

verted into the submuriate, by almost all vegetable substances, distilled waters, extracts, oils, syrups, honeys, gums, and alkohol. Its action upon albumen is so marked, that it has been proposed by Dr. Bostock as the most delicate test of that animal oxide; but in sufficient quantity it also coagulates milk, and causes a precipitate with gelatine, and in beef-tea. It is precipitated red by osmazome, and orange by bile; and it acts remarkably on fibrine or flesh, corrugating and hardening it. But the manner in which the presence of these substances alters the action of the reagents or tests is still more worthy of notice. The precipitate obtained from mixtures of corrosive sublimate, with boiled beans and broth, or albumen, vegetable broth, boiled apples, tea and sugar, was not blackened by lying in lime-water for two days, (p. 83, Vol. I.) yet yielded mercury by sublimation. Dissolved in Burgundy wine, it was precipitated black by potass, very dark green by ammonia, blue, passing to violet by prussiate of potass, and syrup of violets was changed by it to green. Dissolved in beef-tea, it is precipitated white, or gray or black by potass, and dirty white or yellowish by lime-water, and the addition of bile to a solution of corrosive sublimate prevented it from being affected by ammonia or potass.

In regard to arsenic, the necessity of being able to detect it, when disguised by the presence of other matters, is more obvious, as it does not discover itself by its taste, and is therefore more likely to be employed for committing murder than any other mineral poison. Solutions of albumen, or gelatine, and common beef-tea, and bile, were not affected by the addition of arsenic, and did not affect considerably the action of the common reagents. Strong tea, however, completely altered them; so that nitrate of silver gave a yellowish white precipitate, which became instantly black, lime-water a dirty canary yellow, and sulphate of copper a reddish violet; sulphuretted hydrogen alone furnished its usual yellow precipitate. Decoction of coffee with arsenic was precipitated of a deep yellow by nitrate of silver, of a grass green by ammonia-sulphate of copper, of a golden yellow by sulphuretted hydrogen, and yellow by lime-water. Wine with arsenic gave deep yellow by sulphuretted hydrogen, bluish-black by ammonia-sulphate of cop-

per, and white by nitrate of silver: with a larger proportion of arsenic, the copper yielded a green precipitate. Arsenic mixed with milk was also difficult to detect. All these mixtures, evaporated to dryness, and treated with distilled water, indicated the presence of arsenic, by one or other of these tests; and from all of them, metallic arsenic was obtained, by reduction with potass and charcoal. These are all the facts of this nature in regard to arsenic given by M. Orfila, but they are far from being sufficient; and we regret that want of room obliges us to postpone many corrections and additions which our experience could afford.

Tartar emetic gives an orange precipitate, containing oxide of antimony, when mixed with vegetable juices and decoctions. The tincture of gall-nuts is its most delicate test, and furnishes a copious curdy dirty yellow precipitate. One part of a saturated solution of tartar emetic, mixed with ten of red wine, remains transparent, but the mixture yields a reddish yellow precipitate, on the addition of some drops of hydrosulphuret of ammonia, or hydrosulphuretted water, and becomes green on the addition of a larger quantity of the reagent; with tincture of galls the precipitate is clear violet, and with sulphuric acid deep violet. One part of the solution, with ten of strong tea, remains transparent, but the mixture is precipitated deep red by hydrosulphuret of ammonia, and yellowish-white by sulphuric acid; but is merely rendered turbid by tincture of galls. Albuminous or gelatinous fluids or bile do not seem to alter the effects of the reagents in this case.

A solution of nitrate of copper is precipitated of a reddish yellow by tea. When mixed with red wine, in the proportion of one to ten, it remains transparent, but the mixture is precipitated black by the hydrosulphurets, marron brown by the precipitate of potass, and very dark gray by ammonia, which does not redissolve the precipitate entirely, and never gives a blue colour to the fluid. Acetate of copper forms a coagulum in albuminous fluids and milk, and it seems to be rendered insoluble in water by being triturated with sugar.

Muriate of tin decomposes almost all animal and vegetable fluids, except simple syrup.

Sulphate of zinc in solution is not affected by syrup or Bur-

gundy wine, but is precipitated deep blue by tea and galls, white by albumen and gelatine, yellow by bile, and curdles milk.

Nitrate of silver in solution is not affected by tincture of gall-nuts or gelatine; but it changes the colour of tea to red and black, and precipitates albumen, gelatine, milk, and bile. Mixed with Burgundy, it is precipitated of a violet colour instead of yellow, by phosphat of soda.

Muriate of gold in solution is not affected by syrup; is precipitated reddish yellow by tea; red, chocolate, or metallic, by tincture of galls; deep purple and metallic, by Burgundy; yellowish, by albumen and gelatine; green, passing to purple and violet, by bile; and curdles milk.

Nitrate of bismuth is not affected by gelatine; is precipitated yellowish white by tincture of galls and strong tea; yellow, by bile, and coagulates albumen and milk. Burgundy gives a precipitate of a rosy or violet colour; and the supernatant liquor, which is not discoloured, loses its colour on the addition of ammonia, without yielding a white precipitate, although the hydrosulphurets prove the presence of bismuth.

Acetate of lead is not affected by gelatine; is precipitated by bile and wine, and yellowish white, by tincture of galls, or tea; coagulates albumen and milk. Burgundy, containing lead, loses colour, and gives a dirty yellow, instead of a white precipitate with ammonia; and although it is precipitated by the hydrosulphurets, the wine unimpregnated by the lead is affected in the same way; but hydrosulphuretted water precipitates the poisoned, and does not affect the pure wine.

As connected with the chemical history of poisons, we may here notice M. Orfila's directions for detecting them, chiefly for the sake of noticing the methodical manner in which he treats the subject. In regard to each principal poison, he describes minutely the line of conduct to be followed in four different cases; when the individual is still alive, and the remains of the poison can be procured; when he is alive, and there are no remains, but the matters vomited or passed by stool can be had; when he is alive, and there are neither remains nor egesta; and, lastly, when he is dead. M. Orfila duly appreciates the value of the processes recommended by different chemists, and

describes minutely the precautions to be taken, in order to render the examination in every possible case satisfactory. It would not be proper at present to enter into any detail upon this extensive subject; but we cannot omit noticing that M. Orfila was able, in several instances, to detect poison, both in the egesta, and when combined with the substance of the stomach.

Our readers will perceive the value of these facts, although we have been obliged to state them in the most concise manner, and to omit many altogether, that we may leave room for some account of a series of still more interesting observations on the actions of all the various corrosive poisons upon the animal economy; a subject upon which there are still many popular errors, and great obscurity. Upon each principal poison, M. Orfila arranges his observations under three heads,—its action upon the animal economy, when taken into the stomach, injected into the veins, or applied externally;—the general symptoms produced by it, illustrated by cases;—and the organic lesions to which it gives rise.

In order to ascertain the manner in which each poison produces death, M. Orfila has been obliged to perform a vast number of original experiments, which constitute a real addition to our knowledge of the subject. We conceive ourselves entitled to speak with confidence in regard to our author's merits, because we have been and are engaged in researches of a similar nature, and know their difficulty.

M. Orfila made experiments in several ways. He introduced the poison into the stomach in various doses, without in any way injuring the animal. Where the event was fatal, this mode of experimenting is without objection, and satisfactory; but when the substance is quickly rejected by vomiting, we are not entitled to pronounce it innocent, because no other bad effects follow. It is from not attending to this circumstance that many alleged antidotes have acquired unmerited reputation. In order to obviate this objection, M. Orfila, in many cases, injected the poison through a hole made in the œsophagus, and then put a ligature around that canal, to prevent vomiting. In some cases, no doubt, he was in this way enabled to attain his object; but the method is liable to very great objections, as the animal is subjected to considerable injury in detaching and tying the

œsophagus, and will suffer much distress from being prevented from vomiting, even supposing the substance not to be poisonous; and accordingly we find M. Orfila himself admitting that some animals, on whom the operation was merely performed without any poison being administered, died sooner than others who got poison at the same time. From our own experiments, we are satisfied, that, by much the best method of ascertaining the poisonous nature of any substance, and of tracing its effects upon the system, is, to apply it to a slight wound in some unimportant part, reaching to the subcutaneous cellular membrane. We are thus able to distinguish accurately between its local and general effects; and it is astonishing how small a quantity of a really poisonous substance, applied in this way, will produce death. The method has not been altogether neglected by M. Orfila, but only not carried to the extent it deserves. Another mode of experimenting used by M. Orfila, was, the direct injection of the suspected substance into the circulating system, by throwing it into the jugular vein. The results are undoubtedly interesting, but they are not conclusive as to the poisonous nature of any substance, for they may kill in other ways; for example, by chemical action coagulating the blood,—and yet be perfectly innocent, taken into the stomach, or inserted into a wound. We may also here notice an error into which M. Orfila has sometimes fallen, in concluding that because a substance, injected into a vein, produces different and much more violent symptoms than when taken into the stomach, it does act by absorption. But surely there is a very wide difference between the action of a substance rudely thrown into the circulating mass, and one gradually taken and insensibly blended with it. Besides, the substance may not be absorbed entire, and unchanged; and yet we are warranted, in common language, to say, that it acts by absorption, if the essential constituent by which it acts on the constitution be absorbed.

We therefore consider Dr. Lafort's proof against the absorption of corrosive sublimate, as being totally unfounded; nor do we acquiesce in Mr. Brodie's, that, when it destroys the inner membrane of the stomach, the idea of absorption is precluded. That it may, and occasionally does kill, by disorganizing the stomach, and the violent impression it makes

upon it, independently of absorption, just as a child is sometimes killed by a large draught of boiling water, we admit; but there are abundance of facts, which prove that it may be absorbed even when the part to which it is applied is disorganized. M. Orfila also seems to adopt Mr. Brodie's opinion, in regard to the immediate cause of death from corrosive sublimate; that it was not in the stomach, because its functions may be suspended for days, without death being produced, but that it was in both the brain and the heart. We doubt much, however, whether we are yet so far advanced in physiological science, as to adopt his conclusions, or admit the validity of his arguments. But this subject would require a very long discussion. We therefore postpone it to another opportunity, and return to M. Orfila, and the immediate effects of the various poisons he has examined.

The modes of action of corrosive sublimate, may be summed up in the following theses:

1. Corrosive sublimate acts instantaneously, as a chemical agent, on the part to which it is applied, corroding or disorganizing it. This action may be so intense, as to produce almost instantaneous death, (Sproegel, Experiment 4.) Where the animal survives the first impression, its death is the consequence of the inflammation produced, and is seldom very speedy.

2. Corrosive sublimate, and, indeed, every mercurial, is apt to produce a specific excitement of the system, of which salivation is a peculiar symptom; and this action may also be so excessive as to produce death.

The action of arsenic is much more obscure; but we know that it acts in a totally different manner, and upon different principles from corrosive sublimate. It is *not* a chemical caustic, and ought to be removed from among the corrosive or escharotic poisons, with which it has hitherto been classed by all systematic writers, even by M. Orfila, in whose description of the organic lesions produced by it, the bad effects of this error are evident. The primary action of arsenious acid, we think, may be summed up in the following theses, chiefly the result of a great variety of experiments, made by the late ingenious Dr. Campbell, at most of which we assisted:—

1. It does not act chemically on animal matter, living or dead.

2. Its chief effect is to produce a disease somewhat analogous to cholera morbus, whether it be taken directly into the stomach itself, or inserted into the subcutaneous cellular membrane of a remote part, or applied to a delicate membrane. In some few cases, where the action of the poison is most intense, death occurs from the sickness or fainting, without vomiting or purging.

3. Frequently a considerable interval intervenes between its being received, even in solution, into the stomach, and its action.

4. Neither paralysis of the voluntary muscles, nor convulsions, nor delirium, nor coma, nor disordered respiration or circulation, are ordinary symptoms of the disease produced by arsenic.

5. After death, we were frequently unable to discover any organic lesion, and we generally found that the inflammation was less, in proportion as the arsenic was more speedily fatal.

Copper. M. Orfila has repeatedly had opportunities of giving verdigris and acetate of copper to dogs of different size, and he has constantly remarked, that, when the dose of the latter exceeded twelve or fifteen grains, the animals perished in less than three quarters of an hour. The symptoms which preceded death, were abundant vomitings of a bluish matter, evidently coloured by the metallic salt; fruitless retchings, after he had emptied his stomach of its contents; plaintive cries; great difficulty of respiration; irregularity and quickness of pulse; frequently general insensibility; the animal couched as if dead; almost always he was convulsed; and some moments before death, general rigidity, tetanic struggles, and a great deal of foam at the mouth, were observed. On examining the body immediately after death, no contractility remained in the muscles; the mucous membrane of the stomach was covered with a bluish layer, containing a portion of the ingesta, (*matière ingerée*,) which layer was hard, as if horny, and when scraped, the mucous membrane below was of a rose colour. The trachea and bronchiæ were filled with white froth; the lungs crepitated, and exhibited some red points, upon a pale ground. The heart had ceased to beat.

The injection into the jugular, of a grain of acetate of copper in half an ounce of water, commonly causes death in ten or twelve minutes. The animal at first performs the motions of mastication and deglutition, and afterwards vomits with violent efforts; he respires with great difficulty, and is very violently convulsed; he lies down,—suddenly becomes insensible,—the rattle comes on, and he dies. On opening him, nothing remarkable is perceived in the *primæ viæ;* the irritability of the muscles seems extinguished; there is no change in the lungs, and the heart is without action.

Tin. Three-fourths of a grain of muriate of tin, in solution, injected in small quantity into the jugular vein, produced paralysis and insensibility; two grains tetanus; and six grains speedy death after vertigo. On dissection, the lungs were more or less shrivelled, and partially gorged with blood; the blood itself was dark coloured, and there was a slight redness of the mucous membrane of the stomach and duodenum. Muriate of tin, introduced into the stomach, excited violent vomiting, great depression, and death without paralysis or convulsions. On dissection, the stomach was indurated, and as if tanned; ulcerated in various parts, and of a dark red colour; and the intestinal canal contained much black thick ropy bile. The lungs were sound.

Silver. A very small quantity of nitrate of silver in solution, injected into the jugular, produced difficulty of breathing, threatening suffocation, retching, pain, convulsions, and death. On dissection, the lungs were found gorged with blood, and the heart distended with black blood. A dog took into the stomach twenty grains, dissolved in seven drachms of water, which only produced uneasiness and depression; in two days, it got thirty-two grains more, which excited frequent vomiting, from which it speedily recovered. On the fifth day, thirty-six grains were thrown into the stomach, through a hole in the œsophagus, which was immediately tied to prevent vomiting; the animal instantly suffered excruciating pain, which ceased in three hours, and died on the night of the following day. The whole mucous membrane of the stomach was dissolved into a pulp, but the lungs were healthy.

Zinc. A contracted solution of zinc, injected into the jugular

vein, produced retching, coma, and death. On dissection, no morbid alteration was discovered. Taken in large quantities into the stomach, it only acted as an emetic, accompanied with temporary uneasiness and depression; but when the vomiting was prevented, by putting a ligature on the œsophagus, the animal died, and the stomach was everywhere of a dark red colour; and the lungs were a little darker than usual.

Gold. The muriate in solution, injected into the jugular, killed, apparently by inducing suffocation; it also excited vomiting. The lungs were gorged with blood, so as to sink in water, and the heart was full of black blood. Taken into the stomach, muriate of gold proves fatal in consequence of the inflammation it excites.

Bismuth. The supernitrate injected into the jugular vein, produced retching, plaintive cries, convulsions of the limbs, palpitation, difficulty of breathing, and general depression; or vertigo, and intoxication, according to the quantity. The lungs were dark coloured, but turgid only in small portions, or wrinkled, and the left ventricle and arteries contained only a little black blood. The subnitrate of bismuth, introduced into the stomach, produced nausea, and vomiting of white ropy matter, difficult, noisy, and deep respiration, trembling of the limbs, and death. The mucous membrane of the stomach was universally inflamed or destroyed, and portions of the lungs gorged with blood, so as to resemble liver.

Acids. The sulphuric, nitric, muriatic, and phosphoric acids, when injected into the jugular vein, caused death by coagulating the blood; when introduced into the stomach, they killed by the inflammation and disorganization of that organ; and when applied to the skin, by the burn which they produced, or the suppuration which was the consequence of it. The nitrous, fluoric, sulphurous, phosphorous, oxalic, and tartaric acids, acted in the same manner.

Alkalis. Potass, soda, and ammonia, and their subcarbonates, act also in the same way. They coagulate the blood when injected into the jugular, and they corrode the stomach; but ammonia also produces tetanus and violent convulsions.

Barytes, pure or carbonated, introduced into the stomach, caused vomiting, hiccup, insensibility, convulsions, and death.

The stomach was inflamed and corroded, the lungs nearly natural. The muriate of barytes, injected into the jugular, caused great agitation, and convulsions. The respiration was not affected. The heart was distended by coagulated blood, the stomach was healthy, and the lungs nearly natural; introduced into the stomach, it produced vomiting and purging, violent convulsions of the anterior extremities and face, and greatly accelerated pulse. The stomach was of a livid red, and the mucous coat could be easily rubbed off. The left ventricle of the heart contained black fluid blood.

Lime was introduced into the stomach of a little dog, to the extent of a drachm and a half in powder. It excited vomiting, and the discharge of much saliva, but caused little distress, and the dog soon seemed to recover. In five days it got three drachms, which caused it to vomit quickly, and to be depressed, and it died in three days, without having experienced convulsions, or vertigo, or paralysis. The pharynx and œsophagus were slightly inflamed; and the mucous membrane of the stomach was inflamed throughout its whole extent.

Phosphorus, dissolved in oil, injected into the jugular vein, instantly produced exhalations of phosphorous acid by the mouth and nostrils, caused difficult respiration, and panting, and death, after having rejected a great quantity of bloody serosity, without any remarkable nervous symptom. The left ventricle of the heart contained blood as black and fluid as that which filled the right. There were several livid and dense portions of the lungs; the stomach was natural. Phosphorus introduced in small lumps into the stomach, does not at first induce any remarkable effect, but the animal falls gradually into a state of depression, and dies. The stomach is much inflamed, and contains a ropy flocculent fluid. When it is introduced into the stomach, dissolved in oil, its action is much more violent. Fumes of phosphorus and gas were exhaled from the lungs; the animal seemed to suffer exquisite torture. It then lay immoveable, and was violently convulsed before death. The stomach was perfectly disorganized and corroded. The lungs were red, gorged with blood, and did not crepitate.

Powdered glass, taken into the stomach, produced no effect.

Cantharides in tincture injected into the jugular vein, pro-

duced vertigo, stupor, and death. The blood in the left ventricle of the heart was fluid and reddish; that in the right, black, containing coagula; but exactly the same effects were produced by the injection of alkohol alone. Oil digested upon cantharides, was next tried. It soon deprived the animal of sensibility and muscular power, and induced successively tetanus, convulsions, difficult respiration, and death. The lungs were very large, and gorged with a great quantity of reddish serosity; in some parts they were livid and compact. The mucous membrane of the bladder was slightly red, and the stomach natural. Cantharides in powder, taken into the stomach, acted as a corrosive, producing vomiting, the discharge of much bloody mucus, depression of vital power, and death. The stomach is always violently inflamed, and the bladder sometimes.

Lead. The solution of the acetate, to the extent of three grains, injected into the jugular, caused only slight vomiting of white ropy matter. Five grains seemed, at first, to have no effect, but in three days the animal became depressed, and refused its food, but preserved the power of walking. On the fourth day, its gait was unsteady and difficult; its hind legs were slightly convulsed; it was very weak, and it died on the fifth day. The lungs and stomach were healthy. Thirteen grains killed instantly, without any mark of pain or convulsions, after three or four deep inspirations. The blood in the left ventricle was fluid, and of a florid red. When taken into the stomach, in powder, and in considerable quantity, it caused death, after vomiting, and insensibility. The stomach was inflamed. Given in solution, it also excited nervous symptoms, loss of muscular power, convulsive trembling of the limbs, and vertigo.

Hydrosulphuret of potass. In solution injected into the jugular it produced immediate tetanus, from which, in one instance, the animal quickly recovered, and in another he perished. The blood in the heart was florid, and in the left ventricle of a deep red. Taken into the stomach it excited vomiting, difficult respiration and depression, or, when vomiting was prevented, violent attempts to vomit, hurried respiration, panting, loss of muscular power, convulsions, tetanus, death. The stomach was found much inflamed and ulcerated, and the lungs partially gorged. The left heart contained black blood.

Iodine. M. Orfila is assuredly the first to have tried the effects of this singular and costly substance upon the animal economy, both on dogs and on himself. He first took two grains fasting, but they only excited an abominable taste, and some nausea. Next day he took four grains. He was immediately sensible of constriction and heat in the throat, which lasted a quarter of an hour, and he soon vomited yellow liquid matter, in which iodine was easily recognized. Two days after he took six grains, which instantly excited heat and constriction of the throat, nausea, irritation, salivation, and pain of stomach; and in ten minutes copious bilious vomiting, and slight colic pains, which yielded to two emollient clysters, after having lasted an hour; the pulse rose from 70 to 90, and was fuller. Next day he only felt slightly fatigued. Dogs could bear about a drachm and a half of it, if they were permitted to vomit freely; but if the œsophagus was tied, it proved invariably fatal, after exciting violent efforts to vomit, hiccup, thirst, quick pulse, and great depression. The edges of the rugæ of the stomach were always corroded and ulcerated. The lungs and other organs natural. A large quantity, two or three drachms, proved fatal to dogs in the same way, although the œsophagus was not tied; and it is worth remarking, that M. Orfila was able to detect iodine in the bluish pasty matter accompanying the stools which were first passed after taking it, or in the first matters vomited, which were always tinged yellow. One drachm and twelve grains of iodine applied to a wound in the back of a dog, acted merely as a caustic, causing a thick yellowish white eschar to slough off in three days.

To these inquiries into the mode of action of each poison upon the animal economy, M. Orfila subjoins some cases, original and selected, in which their deleterious action upon the human body was evinced; and, from the whole, he draws up a summary of the organic lesions produced by each.

M. Orfila's work also contains another series of interesting and original experiments, on the antidotes of the several poisons mentioned in it, as forming a branch of their treatment. On the properties which a substance ought to possess, in order to constitute it an antidote, he agrees with Renault,* except

* Edinburgh Medical and Surgical Journal, Vol. viii. p. 89.

in not requiring it to be soluble in water and animal fluids, since magnesia, the best antidote of the mineral poisons, is not soluble; and he might have also struck out from among the requisites, their being perfectly innocent when taken in large doses; for both the alkalis and mineral acids, although poisonous when given in large doses, may be legitimately considered as antidotes to each other, and are in fact used as such. In experimenting upon poisons and their antidotes, no positive conclusion can be drawn, unless the œsophagus be tied, as the recovery of the animal may be owing to the rejection of the poison by vomiting, while, on the other hand, we must be equally cautious in drawing positive conclusions from the comparative time animals survive the operation; for animals differ so much in vitality, that one, to whom no poison has been given, shall die of the effects of tying the œsophagus, sooner than another to which also a dose of poison has been administered. Hence M. Orfila concludes, that "When it is established that any poison produces inflammation, ulceration, or erosion of any part of the alimentary canal, we may, without hesitation, pronounce any chemical reagent, which prevents the occurrence of these effects, to be its antidote, at whatever period death may succeed the experiment." (Vol. II. p. 48.) Proceeding upon these principles, he rejects many of the antidotes proposed by Navier, and has established the virtues of others. The great length of this article will only permit us to attend to the latter, the knowledge of which cannot be too generally diffused. Albumen he finds, by experiment, to be the only counter-poison of corrosive sublimate; and, in fact, taken in sufficient quantity, it decomposes the metallic salt, forming a triple compound, consisting of albumen, muriatic acid, and protoxide of mercury, or calomel, which may be swallowed in large doses with impunity. It has also the great advantage of being always at hand, and, there is no danger of giving it in excess. The practical rule, therefore is, that as soon as we are called to a person suspected of having taken corrosive sublimate, we should immediately make them swallow as many whites of eggs, well mixed with water, as the stomach can contain. It will immediately decompose the metallic alt remaining in the stomach; and if it excite fresh vomiting, so

much the better. Along with this, blood-letting, &c. may be had recourse to, in order to overcome the inflammation already excited. Charcoal, lately recommended as an antidote both of corrosive sublimate and arsenic, has no such effect; and acts only mechanically, by involving their particles, as alumine, or any such substance does.

For arsenic, unfortunately, no antidote has been discovered; we must therefore content ourselves with filling the stomach with viscid and mucilaginous fluids, and exciting vomiting, combined with the antiphlogistic treatment.

Decoction of cinchona, strong tea, and astringents, in general seem to have some power against the poison of tartar emetic; but M. Orfila does not consider them as at all equivalent to emptying the stomach by tickling the throat, and renewed large draughts of warm water.

In sugar and syrup we are rather surprised to find an antidote for verdegris, and yet it seems to rest upon good grounds. M. Marcelin Duval has collected various proofs of its efficacy upon men poisoned with verdegris. In all, it allayed the pain and other alarming symptoms, and produced an immense quantity of liquid stools. M. Orfila has confirmed the conclusions drawn from these observations, by direct experiments on animals; and has also shown that sugar exercises a chemical action on verdegris, and renders it insoluble in water.

Milk is the real antidote of muriate of tin, by which it is completely coagulated. The coagulum contains muriatic acid and oxide of tin, and is not deleterious.

Muriate of soda counteracts the corrosive effects of nitrate of silver.

Calcined magnesia answers very well as an antidote to the corrosive action of the acids, but must be used soon.

The sulphates of soda and magnesia are antidotes to the salts of lead and barytes. They form purging salts, which carry off the sulphate of lead and barytes.

Acetic acid is the best antidote against the effects of the alkalies.

We are afraid that we have trespassed upon the patience of our readers by the great length of this article; but we have been seduced into it, not only by the general excellence of the work

itself, but also by our own predilection for its subject;—a subject of the greatest importance, and which, we are glad to see, is daily attracting more attention, and to the advancement of some parts of which the following valuable inaugural dissertations, recently published in this university, have contributed, either by original experiment, or judicious compilation and criticism. But, alas, the satisfaction we experience in referring to these real proofs of the abilities and industry of the pupils of this school, is largely mingled with regret, that the untimely death of the first gentleman on the list, has already blasted our expectations that he would have continued to prosecute the subject, with the same intelligence and zeal that are so conspicuous in his only production.

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Bigsby, J. J. Diss. In. Quædam de Vi Arsenici Exitiosa complectens. pp. 28. 8vo. Edinb. 1814.

Gordon, Jac. A. Tent. Med. De Arsenico. pp. 54. 8vo. Edinb. 1814.

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BIOGRAPHY.

Memoirs of the celebrated Dr. Harvey, from Notes collected from the Bodleian Library and Ashmolean Museum.

[From the London Medical and Physical Journal, for February, 1815.]

GUL. HARVEUS, An. ætat. 10, in Schola Cantuar. primis doctrinæ rudimentis imbutus; 14, Col. Gonvil. et Caii Alumnus; 19, peragravit Galliam et Italiam; 23, Patavii Præceptores habuit Eust. Radium, Tho. Minad. H. Fab. ab Aquapend. Consul Angl. 16* fit; 24, Doctor Med. et Chirurg. Reversus Lond. praxin exercuit. et uxorem† duxit; 25, Coll. Med. Socius; 37, Anatom. et Chirurg. Professor; 54, Medicus Regius factus. Scripsit de Motu Sanguinis, et de Gen. Animal. Obiit 30 Jun. MD.CLVII. Ætat. 80.‡ (But I well remember that Dr. Alsop, at his funeral sayd, that he was eighty wanting one; and that he was the eldest of nine brethren.)

He lies buried in a vault at Hempsted in Essex, wch. his brother Eliab Harvey built, he is lapt in lead, and on his brest in great letters DR. WILLIAM HARVEY. I was at his funerall, and helpt to carry him into the vault.

In the library at the Physitians' Colledge, was the following inscription above his statue, (which was in his doctorall robes.)

GUL. HARVEUS, Natus A. D. 1578, Apr. 2. Folkston,§ in Com. Cantii, Primogenitus Tho. Harvei et Joanæ Halk. Frat. Germani. Tho. Jo. Dan. Eliab. Mich. Mat. Sorores. Sarah, Amey.

* Sic. Edit. † Smyth.

‡ Over Dr. Harvey's picture in the great parlour under the library, at the Physitians' College at Amen-corner, (burnt.)

§ Borne in the house which is now the post house, a fair stone built house, which he gave to Caius Coll. in Cambridge, with some lands there, in his will. His brother Eliab would have given any money or exchange for it, because 'twas his father's and they all borne there, but the doctor (truly) thought his memory would be better preserved this way, for his brother has left noble seats, and about 3000 pounds per annum at least.

Under his white marble statue, on the pedestall, thus,

GULIELMO HARVEO,
Vivo,
Monumentis suis immortalli,
Hoc insuper
Coll. Med. Lond.
Posuit
Qui enim SANGUINIS MOTUM
(ut et ANIMAL ORTUM) dedit
meruit esse
STATOR Perpetuus.

Dr. Harvey added (or was very bountiful in contributing to) a noble building of Roman architecture (of rustique work with Corinthian pillasters) at the Physitians' College aforesaid, viz. a great parlour, a kind of convocation-house for the fellows to meet in belowe; and a library above. On the outside, on the freeze, in letters three inches long, is this inscription, SUASU ET CURA FRAN. PRUJEANI, PRÆSIDIS, ET EDMUNDI SMITH, ELECT. INCHOATA ET PERFECTA EST HÆC FABRICA. AN. MIↃCLIII.

All these buildings and remembrances were destroyed by the generall fire.

He was always very contemplative, and the first yt. I heare of yt. was curious in Anatomie in England. He had made dissections of froggs, toads, and a number of other animals, and had curious observations on them, which papers, together with his goods, in his lodgings at White-hall, were plundered at the beginning of the rebellion, he being for the king, and with him at Oxon; but he often sayd, that of all the losses he sustained, no griefe was so crucifying to him as the losse of these papers, wch. for love or money he could never retrieve or obtaine. When K. Ch. I. by reason of the tumults left London, he attended him and was at the fight of Edge-hill with him; and during the fight, the Prince and D. of Yorke were committed to his care. He told me that he withdrew with them under a hedge, and tooke out of his pockett a booke and read; but he had not read very long before a bullet of a great gun grazed on the ground neare him, which made him remove his station; he told me yt. Sir Adrian Scrope was dangerously wounded there,

and left for dead amongst the dead men, stript, which happened to be the saving of his life. It was cold clear weather, and a frost that night; which staunched his bleeding, and about midnight, or some hours after his hurt, he awaked, and was faine to drawe a dead body upon him for warmeth sake.

After Oxford was surrendered, which was 24 July, 1646, he came to London, and lived with his brother Eliab, a rich merchant in London, on —— hill, opposite to St. Lawrence, Poultry, where was then a high leaden steeple, (there were but two, viz. this and St. Dunstan's in the east,) and at his brother's country house at Roehampton. His brother Eliab bought, about 1654, Cockaine-house, now (1680) the Excise Office, a noble house, where the doctor was wont to contemplate on the leads of the house, and had his severall stations, in regard of the sun, or wind. He did delight to be in the darke, and told me he could then best contemplate.

He had a house heretofore at Combe, in Surrey, a good air and prospect, where he had caves made in the earth, in which in summer time he delighted to meditate. He was pretty well versed in mathematiques, and had made himselfe master of Mr. Oughtred's Clavis Math. in his old age; and I have seen him perusing it, and working problems not long before he dyed, and that book was always in his meditating apartment. His chamber was that room which is now the office of Elias Ashmole, esq. where he dyed, being taken with the dead palsey, which took away his speech; as soon as he was attaqued, he presently sent for his brother and nephews, and gave one a watch, another another thing, &c. as remembrances of him. He dyed worth 20,000 pounds, wch. he left to his brother Eliab. In his will, he left his old friend, Mr. Tho. Hobbes, 10 pounds, as a token of his love.

He was wont to say, that man was but a great mischievous baboon.

He would say, that the Europeans knew not how to order or govern our woemen, and that the Turks were the only people [who] used them wisely.

He had been physitian to the Lord Ch. Bacon, whom he esteemed much for his witt and style, but would not allow him

to be a great philosopher, Said he to me, "He writes philosophy like a Ld. Chancellor," speaking in derision.*

About 1649, he travelled again into Italy, Dr. George, now Sir George Ent, then accompanying him.

At Oxford he grew acquainted with Dr. Charles Scarborough, then a young physitian, (since by Ch. II. knighted) in whose conversation he much delighted; and whereas before, he marched up and downe with the army, he took him to him and made him ly in his chamber, and said to him, "Prithee leave off thy gunning, and stay here, I will bring thee into practice." For twenty years before he dyed, he took no manner of care about his worldly concerns, but his brother Eliab, who was a very wise and prudent manager, ordered all not only faithfully, but better than he could have done for himselfe. He was, as all the rest of the brothers, very cholerique, and in his younger days wore a dagger (as the fashion then was, nay I remember my old schoolmaster, Mr. Latimer, at seventy, wore a dudgeon, with a knife and bodkin, as also my old grandfather, Lyte, and alderman Whitson, of Bristowe, wch. I suppose was the common fashion in their young dayes,) but this Dr. would be apt to drawe out his dagger upon every slight occasion.

He was not tall, but of the lowest stature, round faced, olivaster (like wainscott) complexion; little eie, round, very black, full of spirit; his haire was black as a raven, but quite white twenty yeares before he dyed.

I first sawe him at Oxford, 1642, after Edgehill fight, but was then too young to be acquainted with so great a doctor. I remember he came severall times to our Coll. (Trin.) to George Bathurst, B. D. who had a hen to hatch egges in his chamber, which they dayly opened to see the progress and way of generation. I had not the honour to be acquainted [with] him till 1651, being my cos. Montague's physitian and friend. I was at

* This must relate to Bacon's physiological opinions as exemplified in his *Historia Vitæ & Mortis*, the work which produced so much wit in the Tristram Shandy, concerning radical heat and radical moisture. Harvey's mode of inquiry was exactly such as Bacon pointed out in his Nov. Organum. But it must be admitted, that Bacon's only physiological work savours much of precedents, in the Lord Chancellor style.—EDIT.

that time bound for Italy, (but to my great grief dissuaded by my mother's importunity.) He was very communicative and willing to instruct any that were modest and respectfull to him. And in order to my journey, dictated to me what to see, what company to keep, what bookes to read, how to manage my studyes; in short, he bid me go to the fountaine head, and read Aristotle, Cicero, Avicenna, and did call the neoteriques s..t breeches. He wrote a very bad hand, which with use I could pretty well read. I have heard him say, that after his booke of the Circulation of the Blood came out, he fell mightily in his practice, and 'twas believed by the vulgar, that he was crack-brained; and all the physitians were against his opinion, and envyed him; with much adoe at last in about twenty or thirty yeares time, it was received in all the universities in the world, and, as Mr. Hobbes sayes in his book, "De Corpore," he is the only man, perhaps, that ever lived to see his owne doctrine established in his life-time.

He understood Greek and Latin pretty well, but was no critique, and he wrote very bad Latin. The Circuitus Sanguinis was, as I take it, donne into Latin by Sir George Ent, as also his booke de Generatione Animalium, but a little booke in 12mo. against Riolan (I thinke) wherein he makes out his doctrine clearer, was writt by himselfe, and that, as I take it, at Oxford.

His Maj. K. Cha. I. gave him the wardenship of Merton Colledge, as a reward for his service, but the times suffered him not to receive or enjoy any benefit by it.

He was physitian and a great favourite of the Lord High Marshall of England, Tho. Howard, Earl of Arundel and Surrey, with whom he travelled as his physitian in his ambassade to the Emperor ——, at Vienna, Ao. Dni. 163–. Mr. Hollar (who was then one of his excellencie's gentlemen) told me, that in his voyage, he would still be making of excursions into the woods, making observations of strange trees and plants, earths, &c. and sometimes like to be lost. So that my Lord Ambassador would be really angry with him, for there was not only danger of thieves but also of wild beasts.

He was much and often troubled with the gowte, and his way of cure was thus: he would then sitt with his legges bare,

if it were frost, on the leads of Cockaine-house, putt them into a payle of water, till he was almost dead with cold, and betake himselfe to his stove, and so 'twas gone.

He was hott headed, and his thoughts working would many times keep him from sleeping: he told me, that then his way was, to rise out of his bed and walke about his chamber in his shirt, till he was pretty coole, i. e. till he began to have a horror, and then returne to his bed, and sleep very comfortably.

I remember he was wont to drinke coffee, which he and his brother Eliab did, before coffee-houses were in fashion in London.

All his profession would allowe him to be an excellent anatomist, but I never heard any that admired his therapeutique-way. I knew several practitioners in this towne (London) that would not have given 3d for one of his bills; and that a man could hardly tell by one of his bills what he did aime at.

He did not care for chymistrey, and was wont to speak against them,* with undervalue.

It is now fitt, and but just, that I should endeavour to undeceive the world in a scandall, that I find strongly runnes of him, wch. I have mett amongst some learned young men: viz. that he made himselfe away, to putt himselfe out of his paine, by opium; not but that, had he laboured under great paines, he had been readie enough to have donne it, I doe not deny, that it was not according to his principles upon certain occasions to ———, but the manner of his dyeing was really and bonâ fide thus, viz. the morning of his death, about ten o'clock, he went to speake, and found he had the dead palsey in his tongue, then he sawe what was to become of him, he knew there was then no hopes of his recovery, so presently sends for his young nephews to come up to him, to whom he gives one his watch,† to another another remembrance, &c. made sign to —— Sambroke, his apothecary, in Black-fryars, to lett him blood in the tongue, which did little or no good, and so he ended his dayes. His practice was not very great towards his latter end, he declined it, unlesse to a speciall friend,—e. g. my Lady How-

* Sic Edit.

† 'Twas a minute watch, wth. wch. he made his experiments.

land, who had a cancer in her breast, which he did cut off and seared, but at last she dyed of it.

He rode on horseback with a foot-cloath to visitt his patients, his man following on foot, as the fashion then was, wch. was very decent, now quite discontinued. The judges rode also with their foot-cloathes to Westminster hall, wch. ended at the death of Sir Rob. Hyde, Lord Ch. Justice. Anth. E. of Shaft. would have revived [it,] but several of the judges being old and ill horsemen would not agree to it. The scandal aforesaid is from Sir Charles Scarborough's sayings that he had, towards his latter end, a preparation of opium, and I know not what, which he kept in his study to take, if occasion should serve, to putt him out of his paine, and which Sir Charles promised to give him: this I believe to be true; but do not at all believe that he really did give it him. The palsey did give him an easie passeport.

ORIGINAL PAPER.

Case of Inverted Uterus. By Joseph Comstock, M. D.

DEAR SIR,

HAPPENING to have my journal with me which contains minutes of the following case of inverted uterus, I with much pleasure communicate its history to you, since you have intimated that it would be agreeable to receive it. At the same time you have my permission and request to make just such an use of it as you may think proper.

On the 16th of May 1808, I was called on to visit H—— H—— of Washington county in the state of Rhode Island, where I then resided. I was called on account of an inversion of the uterus, which was total, and entirely protruded without the *os externum*, and of the size of a child's head of two years old.

The woman to whom this accident happened was upwards of thirty years of age, and had been delivered of her first child, on the 9th of the same month, seven days before I saw her. The colour of the inverted surface was very dark, or rather quite black, owing to putrid and putrefying coagula, which still adhered and appeared to form a thin layer, or coating, over the whole surface. The smell of the room was offensive in the highest degree, and every circumstance seemed to justify the conclusion that the uterus itself was in a state of gangrene. To add to the horror of the case, the woman was said to have picked or torn off a considerable piece of the inverted uterus, and an excavation, or slightly concave spot, was pointed out to me on the side of the fundus, from whence it was said to have been taken. The excavation was very plainly to be seen, but of the part removed I did not obtain a sight; but conclude that it must have been chiefly coagula, with some of the extremities of the spongy fibres adhering, sufficient to cause the concavity which remained. That

she had picked off something in the anguish or perhaps madness of her situation, was satisfactorily proved by the concurrent testimony of her attendants, or otherwise it might have been supposed that the excavation (which was larger than a dollar) had been occasioned by the removal of the placenta, the edge of which must have covered this part.

There was at the same time a discharge of serous matter which had passed through both the beds on which she lay, and been suffered to run quite across the floor of her room; this was of a serous, or watery nature, and not tinged with blood. I was assured that this evacuation was not constant, but that, before it commenced each time, the uterus gradually swelled to the size of a man's head, and that then the discharge began in a small stream, which gradually diminished its bulk, till it became of the size it now was; and that it had not been of a less size than I now saw it. This circumstance, although I cannot readily account for it, I am induced to mention, because, although the woman herself was in the lower rank of life, yet the novelty of her situation had brought about her persons on whose testimony I could rely. One circumstance, falling under my own observation in confirmation of it was, that notwithstanding the copious discharge already noticed, which had lately taken place, it was not at this time discharging any thing; and this I was desired to notice when I questioned its having emitted, in a stream, the large quantity of fluid which I saw on the floor.

I will only observe further, that if this information was correct, it is probable that the discharge took place at the openings where the fallopian tubes are inserted; it being obvious that the uterus, in its inverted position, must have become nearly full before any discharge could have taken place from these openings; and as it filled, probably swelled to the size mentioned, when a lateral position of the woman, or raising the fundus of the uterus, would be favourable for the fluid, collected in the cavity, to issue out. I see but one objection to this hypothesis, which is the smallness of the orifices where these tubes are inserted; but we must suppose them sufficiently dilated in the present instance to emit a small stream, as I think the fact unquestionable.

The circumstances attending parturition, as I have been able to collect them from the attendants, the midwife, and the attending physician, are as follow, viz. That she was taken in labour in the night of the 8th of May, that a female practitioner attended in the first instance, but that the pains being severe, the woman restless, disobedient, and as it was thought a little deranged, it was concluded to call in a neighbouring physician, who came and succeeded in the delivery of the child early the next morning. It appears that the inversion of the uterus accompanied the attempt to extract the placenta: the physician informed the midwife of the accident at the time, and expressed a certain conviction of the fatality of the case; at the same time he appears to have succeeded in reducing it within the os externum, and upon leaving her ordered strict confinement to a supine posture; which order, although perfectly judicious, was far from being strictly adhered to by the disorderly patient.

I did not meet the attending accoucheur at the house of the patient, yet I afterwards saw him and received from him some further particulars respecting this very interesting case. He informed me, that after the birth of the child, with which no extraordinary circumstance occurred, he made a gentle effort at the cord to extract the placenta, but finding that it did not advance, after a second trial, and after waiting eight or ten minutes, that he introduced his hand to feel whether there was any separation of the cake or not; but finding it still to adhere by its whole surface, he withdrew his hand and pulled at the cord; but with no more force, and he thinks not so much as he had used, without any ill effects, on other occasions; when something came forward which he supposed to be a placenta unusually large; but upon further examination, he found it to be the uterus with the placenta still adhering to the fundus with its whole surface; which he then separated; when some hæmorrhage followed, not more, however, in his opinion, than from two to three pints: then with his hand flattened he restored the uterus, as he supposed, to its right position and place, and enjoined rest; but left her, as he candidly acknowledged, without any idea of her long surviving the accident.

As this practitioner declined again visiting the patient, although subsequently called on when the protrusion again happened (which was on the same day in which he had left her,) another gentleman of considerable eminence in the obstetric art was applied to, who came a day or two after the accident, and who found her, as I was informed, much in the same situation in which I now saw her. His opinion was, however, equally strong as that of the other gentleman with regard to the fatality of the case, and he left her without prescribing any thing.

At the time I was called, besides the appearance of the inverted uterus, and the discharge therefrom, which have been already mentioned, she was labouring under nervous affections of the most violent and distressing kind; so that she supposed herself immediately in the hour of dissolution, which idea could not be chased from her mind, but appeared to be perpetually present; and I was assured that she had scarcely slept at all since her delivery.

My prognosis under all these circumstances could not be otherwise than unfavourable. I however determined not to abandon the patient without attempting something for her relief.

An attempt to revert the uterus I did not then think justifiable, after the abandonment of the patient by two practitioners older than myself; its probable utter impossibility, and especially after the assertion of an author so celebrated as Dr. Denman, that he had never been able to revert an inverted uterus, even in so short a time as four hours after the accident. Only two indications, therefore, from this view of the case, remained to be fulfilled. The first, to check the progress of the threatened, or perhaps, already begun gangrene of the uterus; and the second, to quiet the extreme nervous irritability, and thus procure sleep for the distressed patient.

Having previously experienced the powerful antiseptic effects of the wild indigo, (*Sophora Tinctoria*) of Linnæus, and believing it superior in this respect to the Peruvian bark itself, strips, wrung out of a strong decoction of this indigenous plant, were ordered to be applied to the inverted uterus; at the same time the cinchona was not omitted to be given internally. To fulfil the second intention, *opiates* in sufficient quantity to allay

the inordinate commotion of the nervous system, and to procure sleep, were administered.

In a case so apparently desperate, these circumstances wore a more favourable aspect; her pulse was regular, her voice strong, and her appetite good.

By perseverance in the remedies prescribed for the first seven days, the black colour of the inverted uterus was nearly gone, the smell was less offensive and the bulk much diminished; but the serous discharge still remained, and the extreme despondency and depression of spirits were not much abated, although the opiates administered had the desired effect of procuring sleep.

At this period the cerussa acetata was added to the decoction of wild indigo, principally with a view of lessening the discharge of serous matter; and I had reason to be satisfied with the effects of these remedies, in the rapid amendment afterwards experienced: of which I had frequent information, although the patient, being several miles distant, and in a very retired situation (more than a mile from any road whatever) was not so frequently the subject of my visits as I could have wished, for the purpose of making more particular observations upon the phenomena of so novel a case.

Her amendment was not however entirely uninterrupted, as on the fifteenth of June, (thirty-seven days after the accident) I was requested to visit her on account of her being more unwell. At this time the serous discharge, which had nearly ceased some time before, became more copious, the appearance of the inverted uterus was more red and spongy, its bulk was also somewhat larger, and it was not so much retracted within the os externum as when I had seen it last. She had also a slight cough, and quick pulse, for which I at this time prescribed a solution of tartarised antimony, combined with the camphorated tincture of opium. A solution of acetas plumbi was ordered to be continued, made with vinegar and water, for as the gangrenous appearances had changed for a pale healthy red, the indication for continuing the sophora no longer existed. From about this period her amendment became more perceptible, so that by the second day of July (fifty-four days after the accident) the inverted uterus was diminished to the size, and was much of the shape, of a large pear; and by the

twelfth of the same month, I was assured that it sometimes disappeared entirely by retraction within the os externum.

At what period menstruation recommenced I am not now precisely able to ascertain; but it was some time anterior to this period; and as the uterus in its appearance, and the symptoms at the time of menstruation, were much like those which I have noticed when I was called to her on the fifteenth of June, I am impressed with the idea that she menstruated about that time: it probably beginning thus early because she did not nurse her child; which her situation in the first weeks rendered her unable to do. This natural evacuation of the menses, however, when once restored, continued regularly at the usual periods from the inverted uterus, as I was assured upon very particular and repeated enquiries, both by the woman herself, and by her sister with whom she lived; the latter being a woman of more than common stability and understanding for one of her rank in society.

Some time after this period, and as I recollect, after the woman had gotten about, and was able to attend to some business, an irregular bred practitioner obtained some credit in this case, and as I conclude induced the woman and her friends to believe that he had reverted the uterus and restored it to its natural situation; but as I was informed by the woman herself that he applied a plaister to her external parts, and by her sister that the uterus at the periods of menstruation sometimes came partially to view,* I am disposed to think that his only merit consisted in pushing the uterus somewhat further into the vagina, and applying a plaister in such a manner as to diminish the capacity of the os externum, and thus retain it there, after having made fruitless and violent attempts at reversion.

A period of seven years and six months has now elapsed since the accident; in which period (until within the last year) I have frequently seen her and made enquiries respecting her situation. I have learned that menstruation has been regular,

* I have before observed that the uterus some time before this period disappeared entirely by retraction within the os externum. Of the appearances at the periods of menstruation, I made many and very particular enquiries; the result was, that the uterus came into view at these times; that it looked larger and redder, and that blood might be seen exuding from its inverted surface.

and that she has enjoyed good health, and been able to do the work of females usually required in the kitchen, and even, in the dairy season of the year, to make the cheese of a large farm, which in that abundant country of dairies is a frequent source of employment, and is considered harder than other kinds of work, usually performed by females.

In conclusion, I may observe, that I consider the management of the placenta as the most delicate part of practice in the obstetric art, but submit any practical deductions which this case might suggest to yourself.

I must beg that nothing contained in this account be construed as designed to throw any censure upon the other professional gentlemen who were concerned in it; the probability is, I think, very great, that there was a predisposition in the uterus to invert, or else, that the slight pulling at the cord, which the gentleman who attended represented his having used, would not have produced that effect.

As to the remedy used in this case to stop the progress of gangrene (sophora tinctoria) I am disposed to consider it a very powerful antiseptic; having, besides the above, used it in a great many other cases wherein mortification was threatened, or actually present, with the most decided benefit, both externally and internally. But on this head I need not further expatiate, as in Dr. Thacher's very valuable Dispensatory* (edition of 1813) it is directed to be kept in the shops, and therefore (as it respects New England at least) may be considered as a legitimate article of the Materia Medica.

I am, sir, with very great respect,

Your most obedient servant,

JOSEPH COMSTOCK.

THOMAS C. JAMES, M. D.

* Since writing the foregoing account, I have observed that Dr. Thacher has not given the dose of this article. I have known many practitioners use it, without much care in this respect, as it is pretty uniformly procured in a recent state from the fields and pastures of New England, where it grows in great abundance. When used externally, this is not of so much consequence; but for internal use, half an ounce of the bark of the root, (which is the most active part of the plant) to a pound of water, boiled 15 or 20 minutes, and given from one to two table spoonsful once in from two to four hours, I consider as medium doses.

MEDICAL AND PHILOSOPHICAL INTELLIGENCE.

REPORT OF THE NATIONAL VACCINE ESTABLISHMENT OF GREAT BRITAIN.

To the right honourable Lord Viscount Sidmouth, principal secretary of state for the home department, &c.

National Vaccine Establishment, Leicester-square,
June 19, 1815.

My Lord,

The Board of the National Vaccine Establishment has the honour to report to your lordship, that a greater number of individuals has been vaccinated in the course of last year than the preceding: that several thousand more charges of vaccine lymyh* have been distributed to the public; whence the destructive ravages of small pox have been diminished.

It appears from the bills of mortality of London, that the deaths occasioned by small pox have decreased in a larger proportion than one-fourth; six hundred and thirty-eight having fallen victims to that malady during the last year, eight hundred and ninety-eight during the former. Large indeed is this melancholy catalogue, which is attributable to the dissemination of varlolous matter by a few interested individuals, who, from sordid motives, continue the practice of inoculating with small pox virus, and diffusing this fatal disease through the metropolis.

With the view of augmenting the benefits of this establishment, the board has lately appointed a class of Extraordinary Vaccinators, in addition to the stationary surgeons of respectability, who, having voluntarily stepped forward to contribute their assistance gratuitously, compose this class, from which it is intended hereafter to elect the stationary vaccinators.

Another class, denominated Corresponding Vaccinators, has also been established, from which a very material extension of the benefits to be derived from the Vaccine Institution

* At the different stations 4,636 persons have been vaccinated, and 32,190 charges of lymph have been distributed.

is confidently expected. Each person will, in his own neighbourhood, be a point, from which the practice will continually diverge, and through whom any communication of importance may at once be made to this board.

The Stationary and Extraordinary Vaccinators must reside in London or in the suburbs; but the Corresponding may live at any distance, or in any part of the world.

The official communications from the Medical Colleges of Edinburgh, Glasgow, and Dublin, evincing their confidence in vaccination, and the annihilation of small pox in the settlements of the Cape of Good Hope and of Ceylon, by its introduction, as formerly reported, have been insufficient to convince some individuals of the security against the infection of small pox; but it is to be hoped that the strong additional facts, hereafter stated, will produce the fullest conviction of its benefits in their minds.

From the official documents transmitted by the right honourable the secretary of state for foreign affairs, to this board, respecting the effects of vaccination in the islands of Mauritius and Bourbon, it appears, that the inhabitants have been secured against the visitation of one of the severest scourges incident to the human race, as the sequel shows. In the year 1728, the small pox swept off nearly one half of the population; in 1756, about one-fourth; in 1771 and 1772, it occasioned a comparatively less, though very great mortality; and in 1792, it destroyed one-third; and of those who survived the disease, one-third lingered out a short and miserable existence, afflicted with dropsy, marasmus, consumption, &c. It is worthy of remark, that in three times out of four, the disease was introduced by slave ships. Let the contrast now be drawn between the introduction of variolous infection and vaccine inoculation.

In 1802 vaccination was introduced from the British possessions in India, but its general use was prevented by the prejudices of the people, and the lymph, after a short time, could not be procured. In 1805, it was re-introduced, and the French government seeing the necessity of regulations, framed some accordingly; but vaccination was only partially adopted; for it did not exist in many parts of the island when the British took

possession of it. In 1811, the small pox re-appeared in the island, and about 220 persons became infected, of whom 30 died. The alarm excited by the progress of this disease prompted his excellency governor Farquhar to issue his mandate, compelling all the inhabitants to be immediately vaccinated, which energetic measure at once arrested the progress of small pox.

In 1813, an opportunity was offered of putting to the test the security of vaccination, by a slave (who came from the island of Madagascar, and was afflicted with the confluent form of small pox) having been landed and received into the hospital; many slaves and other vaccinated persons were exposed to the infection, but no one became the subject of the disease.

From the introduction of vaccination in 1802, to the 28th February 1814, it is computed that 200,000 persons have been vaccinated; and the medical practitioners unanimously declare, that no instance has occurred of small pox being contracted after regular vaccination.

In the island of Bourbon the calamitous effects of variolous disease, and the beneficial consequences of vaccination, though detailed in a more abridged form, as forcibly corroborate the utility of vaccine inoculation, from its having banished the small pox from that settlement.

The National Vaccine Board cannot omit to direct your lordship's attention to the meritorious conduct and zealous exertions of private individuals, not of the medical profession, who have not only vaccinated many hundreds every year, but have studiously maintained a supply of lymph in their districts for the perpetual renewal of vaccination. It has particularly noticed the ardent zeal of Mr. Ellis, of Rhos-farm, who has vaccinated several thousands in North Wales, without a single failure; and also of the late Rev. Mr. Holt, and the Rev. Mr. Finch, two of the earliest friends to the practice; residing, the one in Buckinghamshire, the other in a populous part of Lancashire, and who met with undeviating success; a success which puts to shame the negligent practice of some belonging to the medical profession; for, strange as it may appear, it is not the less true, that there are many places in the

united kingdom, where, though vaccination is professed, it is, in effect, never fairly practised. Lymph, indeed, has been procured from the national establishment, but it would seem only for present, and not prospective purposes; as no pains have been taken to preserve it by a succession of cases; and that too, where the population in many of the districts supplied has exceeded some thousands, and even in some of these where county hospitals are established.

In many instances the board has had reason to lament, that throughout entire districts the lymph has been lost altogether; and when thus suffered to be lost, there must surely be just grounds of suspicion, that interested motives have actuated individuals to throw serious impediments in the way of the general adoption of vaccination.

In confirmation of this conclusion, the board adds the plain and unaffected narrative of a person who, humbly situated in life, has, in the true spirit of philanthropy, been the instrument of dispensing the benefits of vaccination to an extensive neighbourhood, and of preserving a regular supply of lymph, with which many medical practitioners have been liberally furnished.

Mr. W. Jeffrey, of Cambus-baron, near Stirling, after reciting the history of his practice, which, from the purest motives of benevolence he commenced under circumstances not necessary to be detailed, thus proceeds in his communication to the board:—"Vaccine inoculation has acquired such a character for ten miles round where I dwell, that the natural small pox is not heard of. In this village there is not one child which has not been vaccinated, (excepting in two families), so universal has the practice become; and it is remarked by the inhabitants of the village, that the children are more numerous owing to their being vaccinated; and among the children that I have vaccinated, I challenge all the country round to produce any instance in which the inoculation failed to preserve them from variolous contagion, notwithstanding their being exposed to lying in bed, eating, and drinking with those infected with the small pox. I am much surprised when I hear of such backwardness in and about London to the performance of such a salutary benefit to the human race. If any one should speak

against it in any village, or in the large parish of St. Ninians, he would expose himself to the contempt of all the people."

The National Vaccine Board has it in contemplation to enrol the names of such steady and exemplary friends, under the denomination of Honorary Vaccinators, as they cannot with propriety be included in the other orders; and it hopes to receive from this class a continuance of their valuable communications. Though it cannot be supposed that any stimulus is required to incite the active labours of such highly commendable persons, yet the board cannot in justice silently pass over such zeal, without giving some signal mark of its approbation.

Notwithstanding the accumulated and accumulating proofs of the utility of vaccination, there is reason to apprehend that variolous inoculation will still be persisted in, whereby the baneful effects of small pox must be continually propagated.

The board has with regret to observe, that although the punishment of three months' imprisonment was awarded against Sophia Vantandillo, for carrying her child, whilst under the influence of small pox, through the public streets (which infected many others, eight of whom died), the unwary and uninformed are still enticed by the hand-bills of shameless empirics, to submit their children to variolous inoculation. It is, however, yet to be hoped, that the above sentence so recently passed by the Court of King's Bench, which the Board of the Vaccine Establishment has taken every method of promulgating, may produce considerable benefit. But if inoculation of small pox be permitted, the promiscuous intercourse of the infected with society at large ought to be as speedily as possible prevented, and a receptacle* established, to which the diseased should be immediately removed; for the narrow alleys and confined courts in which most of the poor reside must tend to concentrate contagion, to render it extremely virulent, and eventually to disseminate this disease under its most malignant form.

The board selected Sophia Vantandillo as a proper example,

* The Small Pox Hospital has been lately purchased, for the use of the sick poor afflicted with fevers.

on account of the extent of the mischief occasioned by her misconduct, and that this prosecution, followed by a lenient punishment, may prevent any further wilful exposure of inoculated persons, is its fervent wish. It at the same time prosecuted Mr. Burnet, who inoculated the child of Sophia Vantandillo, and who has long circulated the most mischievous and offensive hand-bills, offering to inoculate persons with small pox gratuitously, and stigmatising vaccination as productive of the most loathsome diseases.

This practitioner having suffered judgment to go by default, has been recently sentenced by the Court of King's Bench to six months' imprisonment.

The board has a duty of the highest nature to perform;—and that it is resolved to discharge faithfully and energetically.

The board has endeavoured to form a system, regular and consistent in all its parts, conducing uniformly to one main end, namely, the universal adoption of the practice introduced by the immortal Jenner. It entertains the confident expectation that so great a blessing will be no longer undervalued, and that the labours of the good and powerful will not be rendered impotent by the ignorant and the interested. It trusts, that the wisdom of parliament will not be set at nought by the most unfeeling and worthless of the medical profession, and a disease, even more destructive than the plague, allowed to be fostered by them with impunity, and continually propagated among the unsuspecting multitude of the united kingdom.

The whole of the expenses incident to this establishment, for the year 1814, were defrayed by the vote of parliament which passed last year; but the board regrets, that in consequence of the recent prosecutions and convictions of the persons mentioned in this report, and the measures adopted for the more effectual extension of the practice of vaccination throughout the empire, an addition of *500l.* to the Annual Grant will be necessary.

J. LATHAM,
(President of the Royal College of Physicians) President.

SCHOOL OF PHYSIC IN IRELAND.

[From the Philosophical Magazine, for September, 1814.]

The Education of Medical Students is committed to six Professors. Three of these, viz. the Professors of Anatomy, Chemistry, and Botany, are on the foundation of Trinity College, and are called the University Professors. The other three, viz. the Professors of the Institutes of Medicine, of the Practice of Medicine, and of Materia Medica, are on Sir Patrick Dun's foundation, and are called the King's Professors.

The Lectures on the above subjects commence on the first Monday in November, and terminate on the last day of April in the succeeding year. Dissections and Anatomical Demonstrations begin with December, and end early in the following April. The Lectures on Botany commence on the first Monday in May, and continue to the end of July.

The terms of attendance on each Course of Lectures are four guineas.—The Terms for Dissections and Anatomical Demonstrations are six guineas; for which also, half of a subject for the Muscles, and half of another with the Bloodvessels injected, are furnished. The student is likewise at liberty to dissect any number of subjects he may procure at his own expense. For the use of the dissecting-room during the season, without subjects being furnished, and for the Demonstrations, five guineas are paid; or for the Demonstrations alone, four guineas.

The Students in Botany have the use of one extensive Botanic Garden, and access to another in the immediate vicinity of Dublin. The opportunities of acquiring a knowledge of other branches of Natural History are also very considerable, especially of Mineralogy, by means of the valuable collection of Leske, which is open to the public.

The Clinical Hospital, belonging to the School of Physic, is supported by a large endowment of the late Sir Patrick Dun. It is calculated to contain above one hundred patients; from which number, thirty are selected for the purpose of Clinical Instruction and Lectures. Each of the six Professors acts in succession for three months as Clinical Lecturer and Physician. A large Library of Medical Books bequeathed by Sir Patrick

Dun is appropriated to the use of the students attending the Clinical Hospital. Fee for one year to Sir Patrick Dun's Hospital is at present three guineas, which includes the attendance on the practice of the Physician in ordinary. The terms for each Course of Clinical Lectures are three guineas.

Degrees in Trinity College.—There are two classes of Medical Students at Trinity College. Those of one class are matriculated in the University. Three years afterwards, on producing certificates of their matriculation, and of their having attended Lectures on Anatomy with Dissections, Lectures on Chemistry, Botany, Materia Medica, the Institutes and Practice of Medicine, the Clinical Lectures and Practice of Sir Patrick Dun's Hospital, they are examined by the six Professors, and obtain a Diploma from Trinity College to practise Medicine. This diploma confers all the advantages of the medical degrees taken in the Colleges of Edinburgh and Glasgow.

The other class of Medical Students in Trinity College go through the regular academical course of study. Three years after taking the degree of Bachelor of Arts, having likewise completed their medical education, they are admitted to an examination before the Regius Professor of Physic, and the Professors of Anatomy, Chemistry, and Botany, in the University; and after performing the usual academical exercises, they take the degree of Bachelor in Medicine. Upon sufficient standing, writing a thesis, and undergoing a second examination before the Medical Professors of the University, the degree of Doctor in Medicine is conferred. These degrees rank with those in the Universities of Oxford and Cambridge.

As qualifications previous to examination for the diploma, the certificates of the Professors in Edinburgh are admitted for any three of the courses required to have been attended, with the exception of the Clinical Lectures, which must have been in the School of Physic in Ireland.

Certificates of attendance on the Professors in the School of Physic in Ireland are received in the Universities of Edinburgh and of Glasgow, as giving standing in those places.

A new method of operating for the cure of Popliteal Aneurism, has been employed in Dublin with the most complete success.

The operation was performed by Mr. CRAMPTON, Surgeon-General at the King's Military Infirmary, near Dublin, on the 15th of October. "The femoral artery was laid bare at the usual place, by an incision three inches in length and *compressed*, (but not tied circularly,) by a narrow tape, so as completely to obstruct the current of the blood *with the least possible disturbance to the artery*, or *injury to its coats*. The ligature was, by a peculiar contrivance, applied in such a manner as to enable the operator to tighten or to relax it at pleasure, without interfering with the wound. In two hours and a quarter the ligature was gently relaxed, but not completely loosened; no pulsation in the ham. In twenty-four hours the artery was relieved from all compression; but, as a measure of precaution, the ligature was left in the wound. In forty-eight hours the ligature was withdrawn, and the wound was united by adhesive plaster."

The patient was examined on the fifth day by several professional gentlemen; his health was not in the least degree deranged. The tumour, which had decreased by one half, was without pulsation, and nearly incompressible. The temperature of each foot was 84°.

On the 14th day the wound was nearly healed, and the man went about the ward on crutches.

On the 18th day the wound was healed, and the tumour, which could be seen only in the extended position of the limb, was incompressible, and altogether free from pain.

The advantage of Mr. Crampton's operation consists in its imitating in the most favourable way the process of nature, in the spontaneous cure of aneurism.

1st. By interrupting the course of the blood through the ruptured artery, the fluid contents of the aneurismal sac are allowed to coagulate, and the circulation is thrown upon the collateral branches.

2d. The subsequent obliteration of the artery is effected by a natural process, which protects the patient from the long train of sufferings, and of dangers necessarily attendant upon

the permanent contraction of a great artery, and its separation from the ligature by the process of sloughing on ulceration.

PHILADELPHIA DISPENSARY.

From the annual report, as published by the managers of the institution on the 26th inst. we find that THREE THOUSAND FOUR HUNDRED AND THIRTY THREE PATIENTS, have been attended by the physicians, from December 1st, 1814, to December 1st, 1815.

Patients remaining from last year,		60
Admitted since that time,		3373
Of these the number cured is	3077	
relieved,	57	
dead,	100	
irregular,	26	
removed,	29	
remaining under care,	144	
		3433

The receipts of the Dispensary during the past year have been,		Dolls.	2433 33
Balance due the Treasurer last year,	$ 21 74		
The expenditures have been this year,	2354 93		
Balance remaining in the Treasurer's hands,	56 66		
			2433 33

December, 1815.

Managers Elected, January 1, 1816.

William White,	Robert Ralston,
Lawrence Seckel,	Ebenezer Hazard,
Robert Blackwell,	Isaac Snowden,
Henry Helmuth,	Joseph Crukshank,
Robert Smith,	Elliston Perot,
Godfrey Haga,	Samuel P. Griffitts.

Officers elected by the Managers, January 2d, 1816.

Attending Physicians and Surgeons.

Dr. Joseph Woollens,	Dr. Samuel Emlen, Jun.
Aaron B. Tucker,	John W. Moore,
David Jones Davis,	William S. Coxe.

Consulting Physicians and Surgeons.

Dr. Thomas Parke, Dr. Philip S. Physick,
Caspar Wistar, Thomas C. James.

Treasurer. *Apothecary.*
John Clifford. George G. Tresse.

VACCINE SOCIETY, JANUARY 3d, 1816.

Two thousand one hundred and seventy two persons have been successfully vaccinated by the physicians of the society, in the City, Northern Liberties and Southwark, during the last year.

AMERICAN PHILOSOPHICAL SOCIETY.

At an election of Officers of the American Philosophical Society, held at their Hall, after due notice, on the 5th day of January, 1816—the following Officers were chosen:

President—Caspar Wistar.

Vice-Presidents.

Robert Patterson, William Tilghman, Peter S. Duponceau.

Secretaries.

Thomas C. James, Thomas T. Hewson,
Nathaniel Chapman, Robert M. Patterson.

Counsellors for three years.

William White, Horace Binney,
William Rawle, John Sergeant.

Curators.

Zaccheus Collins, Joseph Cloud, Samuel Colhoun.

Treasurer—John Vaughan.

Census of the Humane and Criminal Institutions in the city of New York, collected by the attending minister, JOHN STANFORD, M. A.

May 1, 1815.

Orphan Asylum.

Boys and Girls, - - - - - 101

Magdalen House.

- - - - -		3

City Alms-house.

Men, - - - - - - - -	183	
Women, - - - - - - -	344	
Boys, - - - - - - -	282	
Girls, - - - - - - -	241	——1050

City Hospital.

Patients, - - - - - - -	144	
Maniacs, - - - - - -	75	——219

United States Military Hospital.

Patients, - - - - - - - -	55

Debtors' Prison.

Committed yearly, - - - - -	1400
Confined at all times, including jail liberties,	90 to 100

Bridewell.

White men, - - - - - -	30	
Black men, - - - - - - -	27	
White women, - - - - -	43	
Black women, - - - - - -	31	——131

State Prison.

White men, - - - - - -	392	
Black men, - - - - - - -	88	
White women, - - - - -	19	
Black women, - - - - - -	66	——565

OBITUARY.

DIED, in London, November 1, 1815, Doctor JOHN COAKLEY LETTSOM, aged 70 years.

——— In Philadelphia, December 19, 1815, Doctor BENJAMIN SMITH BARTON, Professor of the Theory and Practice of Medicine, in the University of Pennsylvania, aged 48 years.

——— December 28, 1815, Dr. THOMAS CHANDLER, aged 42 years.

UNCOMMON WEATHER.

Quebec, August 10, 1815.

On Monday night last the frost was so severe in the vicinity of this city, as to destroy the leaves of the cucumber plants, pumpkins, beans, and other tender vegetables. Early on Tuesday morning ice was found in many places. The frost extended both to lands in high and low situations. It is feared that much injury has been done to the wheat in this district, which had a promising appearance. A snow storm the 20th May, the trees not in leaf on the 4th June, and so severe a frost on the 7th August, are novel features, even in the climate of Canada.

THE WEATHER.

There seems to have been of late irregularities in the natural as well as the political world—but we cannot so well account for the one as the other. The extreme cold which took place the latter end of January, seems to have been extensive, and the spring was so unusually long and cold, as to damage many of our choicest fruits.

This unseasonable cold is ascribed, by some, to the vast fields or islands of ice, which come from the polar regions into the Atlantic sea, and stretch themselves for hundreds of miles along the American coast, until at length they are melted by the heat of the southern latitudes. Hence has arisen a dispute amongst philosophical enquirers. One party says, that the heat of the summer's sun melts the ice and snow in the north as fast as they accumulate in winter. The other party affirms, that in these remote regions, where are nine months of winter and only three months of summer, the ice is gradually increasing; and they instance those seas and countries which were formerly navigable and habitable, are now entirely shut up, and become impervious to man. The Siberian seas are given as a proof of this hypothesis. If it were true, there would be something alarming in it. See H. M. Williams' travels in Switzerland, for a curious paper on this interesting subject.

The drought (or drouth) which began in June, has been long and general, and has retarded the growth of that necessary

article of food for both man and beast, maize or Indian corn: and this warm weather has been suddenly succeeded by unusually cold nights and mornings. There have been partial showers, but not sufficient to moisten the parched earth, and reanimate vegetation.

In Philadelphia, we are told, the whole of July was oppressively hot and dry. About the 25th of that month, the thermometer rose to 97. A few days after it fell to 50; a vast difference at this time of the year, and showing a wonderfully variable climate. About the same time, the mercury in New York is stated to have been only up to 90, and the same at Quebec. In Baltimore, a fair medium may be set down at 94, by the best regulated instruments.—*Baltimore American.*

METEOROLOGICAL OBSERVATIONS.

State of the weather during the last six months of 1815.

July.

Thermometer—Lowest, at 8 A. M. 68. 4th day of the month.
Highest, at 3. P. M. 92. 25th.
Mean. . . . 80.

Winds—variable—mostly westerly. Not much rain. Long continuance of hot weather. Thermometer 92 at Montreal, middle of the month. Some cases of measles still amongst us. Few insects this summer. Good harvests of grain, and well got in.

August.

Thermometer—Lowest, at 8 A. M. 63. 7th day of the month.
Highest, at 3 P. M. 90. 1st.
Mean, ... 78.

Winds—between easterly and westerly. Little rain: hot weather. A very severe gale on the 9th, and another on the 30th. A good fruit year. Small pox appeared at Fishkill, State of New-York.

September.

Thermometer—Lowest at 8 A. M. 50. 29th of the month.
Highest at 3 P. M. 84. 11th to 13th inclusive.
Mean . . . . 60.

Westerly winds prevalent—unusually so the last and this month, in the Atlantic. The passages from Europe have been the longest ever known. A tremendous gale of wind, of short duration, in the morning of the 23d, on the sea-board of part of New England. Little rain.

OCTOBER.

Thermometer—Lowest, at 8 A. M. 41. 30th day of the month.
Highest, at 3 P. M. 64. 15th.
Mean, ... 54.

Winds—southerly and westerly—little rain. Sleighing at Quebec the last of the month. The latter part of this month and beginning of the next, the catarrhal fever commonly called Influenza, was epidemic here. It first appeared to the northward and eastward. The usual symptoms occurred. Bleeding was very often necessary, with the antiphlogistic plan. Patients who were smartly handled were left much debilitated. It was mortal in some cases of previous weakness from sickness or old age.

NOVEMBER.

Thermometer—Lowest at 8 A. M. 31. 14th day of the month.
Highest, at 3 P. M. 65. 6th.
Mean . . . . 42.

Winds—westerly until the latter part of the month, when we had some easterly winds. Dry season continues; it has been unusually so during the summer and autumn. Heavy snow in the state of New York on the 2d and 3d days of the month.

DECEMBER.

Thermometer—Lowest, at 8 A. M. 16. 11th of the month.
Highest at 3 P. M. 56. 4th.
Mean 32.

Winds—Still westerly, and little rain; slight snow on the 10th; Schuylkill frozen over on the 11th, and Delaware frozen at Burlington. Considerable fall of snow on the 29th at night. Much ice in the river.

The small-pox appeared amongst us about the beginning of this month, after an absence of several years; said to be brought from New York. It does not seem to spread much. There has

been a general state of good health in this city, with the exception of the influenza. Foreign newspapers notice the great mortality of the plague; particularly at Cairo, in May. They also mention its prevalence at Constantinople. On the 6th of March, a comet, which took a N. E. course, was seen at Bremen, by Dr. Olbers, near Perseus.

RECENT BRITISH PUBLICATIONS.

An Essay towards the improvement of some important Instruments of Surgery, and of the operations in which they are employed, by William Jardine, illustrated by eleven engravings. 8vo.

Treatise on the Diseases of Arteries and Veins, &c. by Joseph Hodgson. 8vo.

Engravings to illustrate some of the Diseases of Arteries, by Joseph Hodgson, 4to.

RECENT AMERICAN PUBLICATIONS.

T. Dobson, Philadelphia, has just published, Murray's Materia Medica, with Notes by N. Chapman, M. D. 2 vols. 8vo.

Also, Cullen's Synopsis of Nosology, translated from the Latin, by Dr. Thomson. 1 vol. 12mo.

A Treatise on Surgical Diseases and the Operations suited to them, by Baron Boyer; translated by Alexander H. Stevens, M. D. with Notes and an Appendix, by the translator. 1st vol. 8vo. New York.

A. Finley, Philadelphia, has published the "Engravings of the Muscles and Joints, illustrating the Anatomy of the Human Body; by John Bell, Surgeon," containing 17 quarto plates, with copious letter press explanations.